
‘What perceptions do expert clinicians in a Paediatric
Intensive Care Unit hold towards the experience of
Workplace Initiated Learning as a means to maintain
expertise?: an Interpretative Phenomenological
Analysis.

Jill Cochrane

Faculty of Health, Social Care and Medicine

Edge Hill University

A thesis submitted in partial fulfilment of the requirements for the Degree of
Doctor of Philosophy

August 2019

Declaration

I declare that this thesis is my own work carried out under the normal terms of supervision. I confirm that this work has not been submitted for any comparable academic award.

Signed,

JGchrane

Contents

Tables	6
Figures	7
Acknowledgements	8
Preface	9
Abstract	12
Part 1: Introduction and background to the thesis	13
Chapter 1: Rationale and focus	13
1.0 Rationale for the study	13
1.1 Focus of the study	14
1.2 Background: The context of care in a PICU	15
1.2.1 Multi-professional teamwork	15
1.2.2 The physical environment	15
1.2.3 The clinical learning environment	16
1.2.4 The clinical learning environment in the PICU	16
1.3 Overview of the thesis	17
Part 2: Outlining the context, and situating this study within the wider professional and academic literature	18
Chapter 2: The Literature Review	19
2.1 Review of previous relevant research	19
2.2 A critical review of clinical workplace learning research	34
2.3 Interactions with clinical colleagues	34
2.3.1 Learning amongst doctors	34
2.3.2 Learning amongst nurses	41
2.3.3 Learning within the multiprofessional team	45
2.4 Learning opportunities arising from clinical practice	57
2.4.1 Learning from patients	57
2.4.2 Learning from clinical work	60
2.5 Physical and social structures influencing workplace learning	62
2.5.1 The physical workplace	62
2.5.2 The clinical learning environment	64
2.6 Factors influencing engagement with workplace learning	66
2.6.1 Internal motivation	66

2.6.2 External motivators	67
2.6.3 Barriers to learning	69
2.7 Outcomes of learning in the clinical workplace	71
Summary of the critical interpretative literature review	72
Chapter 3: Core concepts, learning theory and a conceptual framework	75
3.1 Defining concepts relevant to this study.	77
3.1.1 Concept of 'professional practice'	78
3.1.2 Concepts of 'expertise' and 'expert practice'	85
3.1.3 Conceptualising 'informal workplace learning'	92
3.2 The rationale for a theoretical framework.....	97
3.3 Theories of learning.....	101
3.3.1 Behaviourism theory	101
3.3.2 Cognitivism theory.....	102
3.3.3 Constructivism theory	103
3.4 Motivation to learn	106
3.5 The conceptual framework for this study	108
3.6 The research question	110
3.7 The research aims.....	110
3.8 The research objectives.....	110
Part 3: Planning and undertaking the research - Methodology and Methods	111
Chapter 4: Methodology	111
4.1 Positioning within key philosophical assumptions	111
4.1.1 Ontology – the nature of reality or 'ways of being' in the world.	111
4.1.2 Epistemology - what is known, or what counts as knowledge or knowing.	112
4.1.3 Axiology - values and what is held to be of value.	112
4.2 Methodological choices.....	113
4.3 Phenomenology as Methodology	113
4.4 Interpretative Phenomenological Analysis (IPA)	115
4.5 Summary of methodological decision-making.....	118
Chapter 5: Methods.....	119
5.1 The research design.....	120
5.1.1 Ethics approval processes.....	120

5.1.2 Participant selection and recruitment	120
5.1.3 The content and conduct of the semi-structured interviews	123
5.2 Data collection	125
5.3 Ethical processes.....	126
5.3.1 Use of an ethical framework	126
5.3.2 Ethical issues specific to this study	128
5.4 Data Analysis.....	129
5.4.1 Step 1 - Reading and re-reading	129
5.4.2 Step 2 - Initial noting.....	130
5.4.3 Step 3 - Developing emergent themes.....	133
5.4.4 Step 4 - Searching for connections across emergent themes	133
5.4.5 Step 5 - Moving to the next case	134
5.4.6 Step 6 - Looking for patterns across cases	134
5.5 Strategies for validation of findings	136
5.6 Reflection and reflexivity	137
Part 4: Results from the data and their integration with relevant theories, concepts and previous studies	138
Chapter 6: Findings.....	138
6.1 The participants	138
6.2 Introduction to the themes	138
6.3 The needs of the child and their family – Master theme.....	140
6.4 The clinical workplace - Super-ordinate theme	145
6.4.1 Clinical Practice – sub-ordinate theme	149
6.4.2 Professional Discourse - sub-ordinate theme.....	158
6.5 Self-Identity – Super-ordinate theme.....	165
6.5.1 Identity as a clinician - sub-ordinate theme	166
6.5.2 Identity as an expert - sub-ordinate theme.....	176
6.5.3 Identity as a member of the multi-professional team - sub-ordinate theme	182
6.5.4 Identity as a lifelong learner - sub-ordinate theme.....	188
Overall summary of the findings.....	191
Chapter 7: Discussion	192
7.1 The needs of the child and family in PICU drives the informal workplace curriculum	194

7.2 The clinical workplace - Super-ordinate theme – opportunities for learning..	196
7.2.1 Clinical Practice – sub-ordinate theme	197
7.2.2 Professional Discourse - sub-ordinate theme.....	202
7.3 Self-Identity – Super-ordinate theme	206
7.3.1 Identity as a clinician - sub-ordinate theme	207
7.3.2 Identity as an expert – sub-ordinate theme	208
7.3.3 Identity as a member of the multi-professional team - sub-ordinate theme	210
7.3.4 Identity as a lifelong learner - sub-ordinate theme.....	212
The research aims	214
The research objectives	214
Chapter 8: Researcher reflections	217
Chapter 9: Strengths, limitations and recommendations	218
9.1 Strengths and limitations	218
9.1.1 Sensitivity to context	219
9.1.2 Commitment and rigour	220
9.1.3 Transparency and coherence	222
9.1.4 Impact and importance	223
9.2 Original contributions to knowledge	224
9.3 Recommendations.....	224
9.3.1 Recommendations for future research.....	224
9.3.2 Recommendations for education.....	225
9.3.3 Recommendations for practice	226
9.3.4 Recommendations for policy.....	226
9.4 Final summary	226
References	227

Appendices

AI	Participant invitation letter
AI.I-II	Participant information sheet
AIII	Participant consent form
AIV	Interview questions for participants
AV	Interview questions with further exploratory questions
AVI	Summary of research process

Tables

2.1	Steps undertaken in the literature review	20
2.2	Inclusion and exclusion criteria for the literature review	21
2.3	Critical appraisal criteria	23
2.4	Details from the papers identified in the literature review	25-32
2.5	Characteristics of the 34 workplace learning studies within the Literature Review	74
3.1	Professional standards to promote the social contract	80
3.2	Teamwork as a feature of professional practice	82
3.3	Lifelong commitment to learning as a feature of professional practice	83
3.4	Themes of enquiry related to Workplace Learning	94
5.1	Potential and actual research participants	121
5.2	Demographics of participants	122
5.3	Sequencing in IPA data analysis	130
5.4	Emergent themes, subordinate and super-ordinate themes, and master theme	135
5.5	Numbers of participant quotes attributed to each theme	136
6.1	Emergent themes supporting the Master theme: The needs of the child and family	140
6.2	Emergent themes supporting the Super-ordinate theme: The clinical workplace	147
6.3	Emergent themes supporting the Sub-ordinate theme: Clinical practice	151
6.4	Emergent themes supporting the Sub-ordinate theme: Professional discourse	160
6.5	Emergent themes supporting the Sub-ordinate theme: Identity as a clinician	168
6.6	Emergent themes supporting the Sub-ordinate theme: Identity as an expert	178
6.7	Emergent themes supporting the Sub-ordinate theme: Identity as member of the MPT	185
6.8	Emergent themes supporting the Sub-ordinate theme: Identity as a lifelong learner	190

Figures

2.1	Literature search flow diagram	22
2.2	Data extraction and thematic analysis from reviewed literature	33
3.1	Figurative representation of theories and theorists relevant to my research	100
3.2	Diagram to represent the conceptual framework	109
5.1	Example of note-taking during IPA analysis	132
6.1	Master theme, Super-ordinate themes and Sub-ordinate themes	139
7.1	Model of expert learning and working	193
7.2	Components of the Activity System	200
7.3	Activity Theory relating to Nancy	201
7.4	Activity Theory relating to Nell	201
7.5	Model of sustained expert practice	215

Acknowledgements

Many people have travelled along this journey with me – too many to name. Special thanks go to the following:

To my supervisory team Director of Studies, Dr. Jeremy Brown and Dr. Carol Kelly, and to Emeritus Professor Dr. Andrew Sackville – you have been great individuals and a great team, supporting me, challenging me and guiding me, I could not have got this far without you all.

To the participants – ‘Abigail’ and ‘Angela’, ‘David’, ‘Debs’ and ‘Dominic’, ‘Nancy’, ‘Natasha’, ‘Nell’ and ‘Nicole’, and ‘Pippa’ – thank you so much for your time, and for your willingness to share your experiences.

To my clinical colleagues, patients and families – you have taught me so much; more than you will ever realise.

To all friends, family and passing PhD travellers who have listened to me and encouraged me along the way, you have helped shape my thinking. And with special thanks to study buddy Ali – we are travelling together in our endeavours, and I couldn’t have a better companion.

Last but far from least, to Matthew, and our children Thomas, Sally, Jonathan and Edward – thanks for all the love and encouragement, interest and moral support you have given me along the way.

Preface

This autobiography illustrates and demonstrates the importance that learning and teaching in clinical practice, and curiosity and inquiry has had for me throughout the whole of my career and how this has influenced my choice of research focus, and also my methodology.

I learnt nursing via what is frequently termed 'a traditional route' – some college days at the school of nursing, attached to the training hospitals, but with much of the learning (and the practical assessments) taking place in the clinical setting. We had lectures from experienced tutors, and what I remember most is their ability to draw on their own practice to illustrate meaning. This was often wide-ranging, and I was impressed by these examples, and the depth and breadth of their experiences, and hoped that in time I would be able to similarly inspire others.

As a student nurse I was allocated to a number of different wards and clinical areas over the course of my three and a half years. The quality of these settings with regard to the learning environment varied widely. The excellent ones usually had a senior sister in charge who was a good clinical role model, demonstrating their expertise in practice, in communication, and in team-working and management, with patient care being at the forefront of all activity. The most valuable area in which I worked as a student came straight after the least valuable, and the contrast could not have been more apparent. In the educationally poorer ward, (I refer to it in this way, as there was limited support of learning from the majority of the permanent staff) I frequently did not know the diagnosis of the patients, or their plan of care, due to limited communication, but I still learnt much from the responses of the patients. I learnt that it's often little things that mean a great deal when you are sick and vulnerable – time to truly listen whilst carrying out practical skills; observing and gently questioning and just being there when they are worried and scared, even if I couldn't find the words. Although I was also drawn to the science and technology behind nursing, I know from experiences such as this that the art of caring is equally important.

I next moved to a ward where the senior sister personified this combination of clinical skills, knowledge and professional behaviour. She had high standards which continued even when she was off-duty, leading with a quiet authority. What was especially memorable was the daily teaching we received every afternoon; permanent staff and students alike. I felt an integral part of the clinical team, and this ethos of learning ran through all aspects of our daily work.

There was a hierarchy within the ward settings, even amongst the students, with those more experienced teaching and guiding those less so. It was not long before I was teaching others – in fact I remember doing so clearly on my first ward, within a few months of starting my training. I hesitate to use the word training, as I have issues with its meaning. To me it conjures up images of being able to 'do' but not necessarily knowing why. I wanted to be a knowledgeable doer, although in all honesty I don't know at what point I realised this explicitly.

My fellow students and I were a close group - we were studying both general (adult) and children's nursing, and as such were a smaller cohort of around 24. Over half of us are still in touch today and meet up every year or so. One of the reasons we became close (we reflect on this regularly!) is that we shared some deep, meaningful, scary and up-lifting experiences during our years as students. We were sometimes given responsibilities over and above our understanding, but we were expected to rise to the challenge and this certainly drove our learning in an effort not only to do the best for our patients and their loved ones, but also to ensure we didn't incur the wrath of the senior nurses. I don't think the culture was to say that we didn't know, but what I do remember was either working it out for myself, asking fellow

students or the more approachable qualified staff, and most definitely learning quickly if that is what was required. I had no ideas of learning theory, workplace learning and apprenticeship models then, but I had a strong sense of the need for self-directed learning (again, not a term I would have recognised at the time), and as such felt my responsibility to learn was greater than that of others to teach me.

There was a particular moment when a clinical tutor asked me to write about a patient (I think as part of my assessment for that ward). When meeting with her after she had read it she suggested that I should study for a Diploma in Nursing after I qualified. Up until then I hadn't realised that there were formal pathways of post-registration study, and although it would be many years before I took up that particular challenge, I often thought of it over the intervening time. I also decided that the role of the clinical tutor was one I aspired to - the combination of clinical expertise and teaching was relevant and important I felt.

Moving on a few years, I began work as a staff nurse in a paediatric intensive care unit (PICU). This had been my aim for some time, as caring for a child and supporting their family, combining the art and science of nursing within a multi-professional team was, I felt, the ultimate combination. Initially, I felt underprepared for this role, and under-confident, but I worked with a number of enthusiastic and supportive colleagues and gradually felt able to apply and develop the skills and knowledge I already possessed and was guided to learn others. At times, I would admire their quiet and reassuring confidence, and hear the ways in which they spoke with parents during the most difficult of situations and wondered if I would ever be able to do the same.

During the intervening years as a student and my first staff nurse roles, there were changes in the organisation of pre-registration nurse education. The position of the clinical nurse tutor disappeared as instead they took on roles within Higher Education establishments. I was disappointed that this role could not form part of my career path, but the PICU often had new staff appointed, and student nurses undertaking clinical placements there, so I had opportunities to informally support the learning of others, as well as continuing my own (also informal) development. There were opportunities for formal learning too, and I finally completed the Diploma of Nursing suggested to me some 16 years after the event. That was the beginning of many years as a part-time student which continues to this day, but even my formal study has had its foundation in practice and practical application.

My first exposure into teaching and learning theory was transformational. The theory was actually quite minimal, but what I remember vividly was the Experiential Taxonomy of Learning of Steinaker and Bell (1979)

Exposure – the learner has observed a competent practitioner

Identification – the learner identifies a willingness to take part and learn further

Internalisation – the skill becomes part of their practice, with decreasing support

Participation – the practitioner can undertake the skill independently

Dissemination – the practitioner can then teach others

After Steinaker and Bell (1979)

Why this was particularly meaningful and memorable to me was that there was a piece of monitoring equipment that I struggled to use effectively, and that as a result felt I could not teach others how to use it. This taxonomy explained the importance of foundations for learning - the initial exposure and support needed in order to gain sufficient understanding and develop

further. I then used this epiphany to ask a colleague to show me how to use the monitor (from first principles), I took time to practice, and was then able to use it safely and effectively, and teach others, too. Why I hadn't done this sooner I cannot explain, except perhaps the feeling that I should not have to ask but be able to work it out for myself. Writing this has brought to mind another painful student experience - a ward where I received my worst report. The expectation seemed to be that a 'good' student nurse would know what was expected of them, without needing to be told, so perhaps that feeling had lingered!

I frequently remembered this example over the years, as I think this demonstrates not only the importance of building on previous knowledge and experience, but also the need for some learning opportunities to be with others, and to be a continuing process. I could not have learnt (nor indeed taught) how to use that piece of equipment in one sitting. In addition, depth of understanding and expertise continues over time, most often in the situation where it is required – in this case the clinical setting.

Although the clinical tutor role had long disappeared by now, my colleagues know of my interest in not only my own continued learning, but also the support of others' learning. The nurse manager of the Unit gave me some supernumerary time to develop the support of students and new staff. This was most welcome, but not a permanent funded role, as when workload was heavy I returned to purely hands-on clinical shifts.

The late 1990's brought welcome changes to the way in which paediatric critical care was organised and funded nationally. We moved to a larger, purpose-built Unit, combining the previously separated general and cardiac intensive care units, and as a result of these changes I was successful in gaining the formal role of Clinical Educator which I combined 50:50 with my clinical responsibilities. This was a great opportunity which I had often thought would never present itself. Because of my interest in teaching and learning I had considered applying for lecturing posts in nursing, but what had prevented me from doing so was that the teaching would be outside of clinical practice. I still felt it important to promote and support the formal and informal learning that can and does take place as part of the working day.

Other changes I witnessed were with regard to the inter-relationships between the medical and nursing teams, and the involvement and recognition of the wider multi-professional team. As a new staff nurse on PICU, and even when I became a more experienced sister, the roles of the team were more defined and hierarchical, but over time this began to change. Nurses took on roles previously ascribed to medical staff, and although actual responsibilities were still defined, there was greater discussion around decision-making and a more distributed leadership structure.

This meant, amongst other things, that as a nurse I needed a more detailed knowledge and understanding of, for example the physiological processes which explained the clinical presentation and physical observations recorded. It was also important that all members of this multi-professional team understood where their individual and collective responsibilities lay, and how such roles and responsibilities integrated into the overall care and management of the child. In addition, changes in clinical management, research into therapies and development of supportive equipment, meant that there was always something new to learn. Changes in parent expectations also had an impact, in that although parents had always expected and received answers to their questions, these often became more sophisticated in nature.

I reflect back on this time, and much of what I learned informally was as a result of questions, discussions and debates with other colleagues. Remembering individual patients and specific incidents are powerful tools for learning and teaching.

I had been in my Clinical Educator role for about 5 years when I heard about and enrolled on a PG Certificate in Teaching and Learning in Clinical Practice. This added greater depth to my understanding of application of teaching and learning theory to practice, as I was by then managing the student nurses on placement to the Unit and supporting the learning requirements of new staff nurses by an induction programme. I could see the benefits of teaching the students some basic concepts on their arrival – some areas of which they already had theoretical knowledge of, but again, the power of learning in practice gave an added dimension. Some of the feedback we received indicated that (like my experiences many years previously) they benefitted from feeling part of the team, and also from working closely alongside the permanent staff. The new staff nurses were also supported (and challenged) by their change of role and responsibility.

As my understanding of workplace learning grew from my formal learning outside of the Unit, so also did my knowledge of how this was evidenced in everyday practice – influenced by the clinical team, the prevailing culture of learning and development, the patients and their families, and the changes and developments in treatment, management and medical interventions.

I was nearing completion of my MA in Clinical Education and beginning to feel that I wanted to use the knowledge and experience I had gained in a different way. A lecturing post within that programme was advertised which I successfully obtained. At an induction day I was encouraged to attend a Doctoral Society meeting, and that first meeting was the beginning of my doctoral research journey...

Abstract

Background: Current literature identifies the importance of lifelong learning (Billett, 2016, Dornan, 2012; Williams, 2010), and professional bodies require clinicians to evidence this commitment, deliver patient-centred Evidence Based Practice and accommodate dynamic interprofessional working practices (General Medical Council (GMC), 2013; Nursing and Midwifery Council (NMC) 2015; General Pharmaceutical Council (GPC), 2017; Health Care Professions Council (HPCP), 2016). Research into clinical workplace learning has more commonly focused on pre-registration and undergraduate learners and those new to such professional roles (Eraut, 2011; Dornan, 2012). This study explores the experiences of clinicians beyond this stage, with participants illustrative of the senior professions within the clinical team. Level of expertise is defined by their role and qualifications (Gobet, 2016).

Aim: To explore the ways in which individual clinicians within an expert multiprofessional team, in the context of a paediatric intensive care unit, experience workplace-initiated learning within the clinical workplace, to increase understanding of

this under-researched form of learning at the 'expert' level of practice, and to inform the development of experts of the future

Method: Using an interpretative phenomenological analysis (IPA) methodology, data were obtained via semi-structured interviews with ten senior clinicians - nurses, doctors, advanced nurse practitioners and a pharmacist. Interviews were recorded, transcribed verbatim, and iteratively analysed.

Results: 'The needs of the child and their family' – the master theme – evidenced a dynamic informal workplace curriculum and fundamentally influenced learning. The first super-ordinate theme, 'The clinical workplace' demonstrated processes of learning in this context and the second, the professed 'self-identities' of the participants identified motivational factors.

Summary: This study gives the distinctive perspective of continued learning in the workplace, as experienced by a multiprofessional team of expert clinicians, identifying the drivers influencing the informal workplace curriculum, and the mechanisms by which such practice is not only maintained but also sustained over the course of a career.

Part 1: Introduction and background to the thesis

Chapter 1: Rationale and focus

1.0 Rationale for the study

When we are unwell, individuals and society at large, want and need expert clinicians to work together to identify what is wrong with us, manage our care, and support us and our relatives during the process. Studies into workplace learning have been undertaken by clinicians, educators and academics, and whilst many have investigated the learning which takes place on this journey to expert practice (Benner, 1984; Dreyfus and Dreyfus, 1986; Eraut, 2011; Davis et al, 2011) much less is known of how this high level of expertise is supported and maintained by informal workplace learning, potentially across a career spanning decades.

The importance of undergraduate learning and that of newly qualified clinicians is clearly evident both for the safety of patients, the reputation of professional groups

and indeed the individuals themselves. However, clinicians can spend some years in such senior expert roles, during which time the knowledge and skill set required may undergo change, as might ways of working with colleagues within the multiprofessional team. Continuing Professional Development (CPD) is mandated by health profession organisations (GMC, 2013; NMC, 2015; GPC, 2017; HCPC, 2016), yet is less frequently researched (Dornan, 2012) despite its potential impact on the quality of healthcare provided.

Nationally, the importance of a well-educated health professional workforce is recognised within the Government, which is 'committed to supporting a world class education and training system to support the delivery of integrated health and related care services' (DoH, 2016 p.9). This objective is the remit of Health Education England (HEE). In addition, there is need for a workforce 'with the knowledge, skills, attitudes and behaviours that are required to deliver high quality services, improve health outcomes and continually improve patient care' (DoH, 2016 p.19) and which is adaptable to change.

The time available for learning is a precious commodity, especially when there is tension between integrating service-provision and learning and when resources – financial and human – are under pressure (Noble and Hassell, 2008; Paradis et al, 2016). Informal workplace learning experiences can be difficult to uncover owing to their tacit nature and its integration with work per se. Thus, identifying the extent to which this form of learning is valued by experts, and in what circumstances, increases its utility. This study enables clinicians at all levels of practice, and educators to understand more of this continued way of 'be-ing' an expert professional and gives guidance to the experts of the future as to the importance of the role of informal workplace learning over the course of a clinical career.

1.1 Focus of the study

This study draws on the experiences of senior clinicians within a multiprofessional team, working together in a Paediatric Intensive Care Unit (PICU), as a means to explore the phenomenon of informal workplace learning at this expert level of practice. The wider context of the continuing education of health professionals is recognised, with respect to significance of the workplace as a source for this learning.

Clinical experts can spend a number of years, maybe decades, in practice, during which time the skill sets required of such roles may be subject to change. The aims of this study were to explore the ways in which individual clinicians within an expert multiprofessional team experience informal workplace learning within the clinical workplace, to increase understanding of this under-researched form of learning at the 'expert' level of practice.

1.2 Background: The context of care in a PICU

In order to increase understanding and appreciation of the context of care within the PICU, and the impact of this environment on the learning experiences of clinicians, this section gives an over-view of the clinical work, particularly with respect to the multi-professional teamwork this engenders; the physical environment; the clinical learning environment in general; the clinical learning environment as specific to the PICU.

1.2.1 Multi-professional teamwork

To practise as clinicians within a multi-professional team such as that of the PICU, requires individual and collective integration of knowledge, skills and behaviours. Such attributes may be gained in different ways and may be understood by a number of theories of learning. As a (simplified) example, most children admitted to PICU require respiratory support via a ventilator, described as a Level 2 patient as defined by the Paediatric Intensive Care Society (PICS, 2016). In order for the child to be cared for safely, and for their physiological processes to be supported effectively, then each profession group/individual team member will be drawing on what they know, what they can do, and how they work together. There are national standards for care (PICS 2016) and in addition professional and organisational guidelines and protocols to govern how these are enacted, namely Codes of Conduct from the GMC, (2013), the NMC, (2015), the GPC, (2017) and those within the HCPC, (2016).

1.2.2 The physical environment

The setting of this study was a regional PICU of over 20 bedspaces. The physical environment was such that most of these spaces were in an open ward, with eight cots/beds in individual cubicles. Given the nursing staff establishment of 6.7 staff per bed (PICS 2016) over 150 nurses are part of the wider MPT, with 20-24 nursing staff on

duty per shift. There are similar standards for consultant and middle-grade medical support, as well as that provided by the Nurse Consultant and the Advanced Nurse Practitioners, such that there will be an additional four or five clinicians on duty. In addition, specialist practitioners from the wider MPT may have input to the care of each patient.

1.2.3 The clinical learning environment

Identified within nursing and medical education literature are the features which impact on the culture of a clinical learning environment. Chan (2003) described these as psychosocial factors, including the personal relationships between learners and educators, the opportunity not only to be involved in activities but also the clarity of such practice, and importantly the degree of job satisfaction experienced by the learner. In a similar but wider vein, Flott and Linden (2016) likewise acknowledge the impact of psychosocial factors, including the interactions of the clinicians, the culture within the organisation, and the teaching and learning opportunities available, and also made reference to the actual physical space.

1.2.4 The clinical learning environment in the PICU

The intensive care unit is a high-stakes environment whereby patient acuity can demand quick thinking and action, such that errors in cognition and subsequent diagnosis and intervention can have an adverse impact on patient outcome (Hayes et al, 2017). Santhosh et al (2018) found the environment of the ICU to impact on teaching due to the challenges of patient complexity, time pressures, and the potentially diverse nature of the learners and clinicians within the MPT. Although this environment is subject to time-pressures, integration of teaching within concurrent clinical practice can optimise learning opportunities. These actions were found to support a safe learning environment, which nurtured an inquisitive approach to practice and promoted critical thinking.

In their critical exploration of the inter-relationship between the clinical learning environment and the psychology of learning, Caverzagie et al (2019) identified short- and long-term strategies to support and optimise learning, in respect of postgraduate medical education structures. Of particular note here, and transferable to the informal workplace environment of critical care, is recognition of the importance of the informal curriculum on learning; the need to develop the environment as a safe place to learn incorporating what they refer to as a 'just culture', and the need to embrace a common

focus and goals, with the establishment of communities of practice. They also identify that these benefits transcend beyond the individual and beyond the present, to benefit the organisation and indeed society into the future.

Staff working on the Unit are visible in their actions and words – they are a constant presence, such that colleagues are invariably able to observe each other's practice, and listen to their dialogue and engagement with clinicians, patients and their families. Some staff may have worked on the Unit for many years, so there is longevity in their working relationships, and also a complexity, given the potential variations in which of the staff will be working together on any one shift.

Under-graduate and post-graduate learners from medical, nursing and the wider MPT may be present on the Unit in addition to the permanent staff. They are supported in their development by the more experienced clinicians, and in doing so have opportunities to gain additional clinical skills, appreciate a deeper understanding of the pathophysiology of critically ill children, and develop an awareness of the particular culture and practice of a critical care environment.

To summarise, Nordquist et al (2019) identify the clinical learning environment to be the overlap between the domains of work and those of learning, distilled in essence to include clinical work, actual learning and the physical and psychosocial environment. This is a complex concept, which may be to the local setting, as well as influenced by wider organisational values. Although Nordquist et al (2019) focus on the environment in respect of post-graduate medical education, the same broad principles are applicable to the learning environment of the clinical workplace. Philibert et al (2019) cautioned that selective application of workplace learning studies within medical education has led to a perception of informal learning as being of less value. My study explores the extent to which participants value such learning.

1.3 Overview of the thesis

Thus, the PICU clinical workplace is a complex setting, by virtue of the patients, staff in the multi-professional team (MPT), that is permanent, and under- and postgraduate learners, and the physical situation. Similarly, workplace learning is a multi-faceted construct (Goldszmitdt and Faden, 2016). This study is situated within wider professional and academic literature - empirical research, and relevant concepts and theories, and is the focus of *Part 2: Situating this research within the wider professional and academic literature*, which contains two chapters. The first, chapter 2,

identified the evidence base for our understanding of learning in the clinical workplace by means of a critical interpretative literature review. Chapter 3 identifies and critically analyses key concepts relevant to the research question, namely *professional practice; expertise and expert practice* and *informal workplace learning*.

Of similar importance and influence is the identification of learning theories relevant to the clinical setting, illustrated by means of a continuum framework. Pertinent theories are critically analysed with a clear rationale for their inclusion. The concluding arguments from these two chapters have identified the research problem, and influenced the research methodology, and the content of the semi-structured interviews.

Part 3: Planning and undertaking the research - Methodology and Methods - evidences the theoretical approach taken and justifies the chosen methodology, with all elements of the study demonstrating a resonant relationship and alignment (Carter and Little, 2007). The knowledge and understanding sought by asking the research question identified the research methodology, and is justified in *Chapter 4, Methodology*. How these philosophical principles have guided the research methods and been enacted in practice is the focus of *Chapter 5, Methods*.

Chapters within *Part 4: Results from the data and their integration with relevant theories, concepts and previous studies* are devoted to the specific findings from this study, chapter 6, and a critical discussion as to their contribution to our understanding of workplace learning is found in chapter 7.

Chapter 8 is a critically reflexive account of my role as researcher throughout this study, and finally Chapter 9 identifies the strengths and limitations of the study and re-iterates its original contribution to knowledge, and recommendations.

Part 2: Outlining the context, and situating this study within the wider professional and academic literature

The following two chapters critically appraise and define what is understood by professional practice, the level of practice of the expert, and the influence of informal workplace learning, both in general, and within the clinical setting. The first, chapter 2, *the literature review*, provides a critically appraised and interpreted body of knowledge

situating this study within professional and academic literature. Chapter 3 focusses on concepts relevant to the research question, *professional practice*, *expertise and expert practice* and *informal workplace learning*. In addition, the learning theories relevant to the clinical setting which facilitate understanding of the processes of learning are identified and organised within a learning continuum. This forms the conceptual and theoretical framework through which to view and analyse the study data.

Chapter 2: The Literature Review

There are challenges to researching an area of practice, such as in this case workplace learning, since it is a multifaceted phenomenon, which can be described as 'local, situated and messy' (Goldszmitdt and Faden, 2016 p. 163). These authors also refer to the thoughts of John Law, a researcher and theorist, who states that 'Simple, clear, descriptions don't work if what they are describing is not itself very coherent' - Law (2004), as cited in Goldszmitdt and Faden (2016 p. 164). The underpinning methodology of this review was designed to account for the many facets of workplace learning, and to give a critical analysis of current understanding - despite its complexity - by offering 'an interpretive commentary on the strengths and weaknesses within an overall body of knowledge' (Thorne, 2016, p.57). Therefore, the overall aim of this literature review was to identify and critically analyse what is understood by informal workplace learning, and the ways in which this has been explored and investigated within empirical literature, to influence and inform this study design, identifying the gap within the research base into which this study can contribute (Booth et al, 2016).

2.1 Review of previous relevant research

Randolph (2009) has designed a phenomenological method of undertaking a literature review. Here the framework is applied as a means to identify a corpus of clinical workplace learning research, and a structure by which to critique, interpret and present the findings in a coherent and logical fashion. In using such a method, individual papers take the place of individual participants. Findings from each paper are extracted as data, which are then thematically analysed. The following steps, similar to those undertaken in phenomenological research, are shown in Table 2.1 overleaf

Review process	Actions	As applied to this review
Step 1	Bracketing	Search strategy – search terms and databases
Step 2	Collect data	Inclusion/exclusion criteria; quality appraisal
Step 3	Identify meaning	Identification of relevant findings from each paper
Step 4	Give meaning	Thematic analysis of findings
Step 5	Thick, rich description	Critical analysis and synthesis of findings

Table 2.1: Steps undertaken in the literature review, after Randolph (2009 p. 10-11)

Literature within the electronic databases Web of Science (1970-2017), CINAHL (Cumulative Index to Nursing and Allied Health Literature) Complete (to 2017), Education Research Complete (to 2016), Health Research Premium Collection (1946-2017) Database ProQuest Dissertations and Theses (to 2017) were searched as follows. The first set (#1) combined topics or subjects using the truncation * and the Boolean term 'OR', as in 'workplace learn*' OR 'work-based learn*' OR 'informal learn*' OR 'incidental learn*' OR 'non-formal learn*' OR 'lifelong learn*' OR 'continuing professional development'. These terms were used to capture the alternative terms which may be used for informal learning within the workplace.

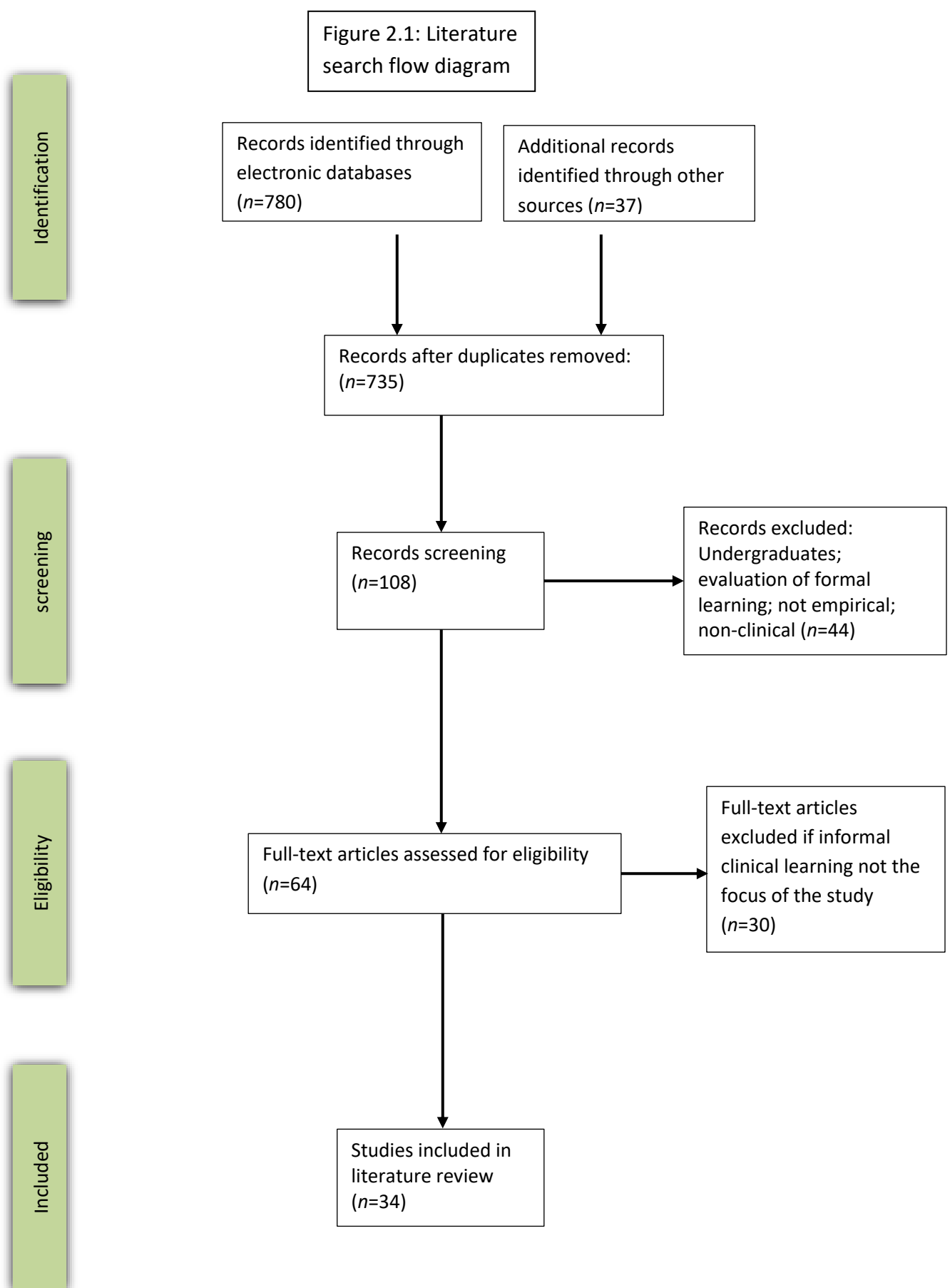
A second set (#2) combined topics again using truncation * and the Boolean term 'OR' as in nurs* OR doctor* OR physiotherap* OR pharmac* or clinician*. This was designed to identify studies pertaining to all potential members of the clinical team in the PICU setting. There were no further limits set to the year of publication. The ProQuest Dissertations and Theses were an additional source of grey unpublished literature. A final set combined #1 AND #2 AND research to capture empirical studies.

Having identified over 750 papers, these were adjudged initially on the title (and abstract if the title was unclear), with further judgments made as to their relevance using the inclusion and exclusion criteria, as shown in Table 2.2. All included papers were empirical studies. Judgments regarding inclusion were founded on the points of similarity of the participants (qualified healthcare workers); the setting (clinical); and the primary focus (investigating or exploring non-formal or informal workplace learning).

Inclusion criteria	Empirical studies
	Clinical setting
	Post-graduate (qualified) clinicians
	Non-formal learning
Exclusion criteria	Undergraduate learners
	Evaluations of formal learning

Table 2.2: Inclusion and exclusion criteria for the literature review

These terms identified papers with a high degree of sensitivity to their content, which maximised opportunities to retrieve pertinent papers. The Number Needed to Read (NNR) was thereby be increased, as specificity was reduced (Booth et al, 2016), however this was preferable to the omission of relevant papers. Having applied the inclusion and exclusion criteria to the papers identified from the databases, the full text articles were read to determine inclusion in the review. A snowball technique was used in that the references lists of included papers were reviewed for articles omitted from the electronic database search, and in addition, databases were searched for papers citing the chosen papers. Figure 2.1 shows the steps taken in literature search.



This literature review included the range of professional disciplines (doctor, nurse, and allied health professionals) represented within clinical teams. Workplace learning was experienced, individually and collectively, within their professional disciplines, and within the wider MPT. No methodology was excluded per se, and there was an appraisal of quality, using criteria identified by Walsh and Downe (2005) as outlined below in Table 2.3. These criteria were specifically identified to determine the quality of qualitative research which Walsh and Downe (2005) synthesised from eight existing frameworks. Their approach was particularly pertinent and applicable to my study in that they defined the synthesis as ‘clearly rooted in a subjectivist epistemology, which views knowledge as constructed and hermeneutic in intent, encompassing individual, cultural and structural representations of reality’ (Walsh and Downe, 2005 p.108) thus appropriately aligning with an interpretivist paradigm (Rubin and Rubin, 2012).

Criteria	Essential elements
Scope and purpose	Rationale and purpose made clear Context identified within existent literature
Design	Methodology and data collection in alignments with purpose Data collection clear and appropriate
Sampling strategy	Justification and criteria apparent
Analysis	Approach justified, including practical details
Interpretation	Context identified Audit trail Data supports findings, with quoted exemplars
Reflexivity	Relationships between researcher(s) and participants discussed; evidence of self-awareness
Ethical dimensions	Ethics approval processes clear; sensitivity to participants
Relevance and transferability	Analysis discussed with reference to theoretical/conceptual framework and previous studies; limitations identified; new insights identified

Table 2.3: Critical appraisal criteria, after Walsh and Downe (2005)

The *essential elements* identified 12 criteria which were used to score the papers and contained further prompts which reinforced the scoring process. The majority of the papers (n=28) achieved 10-12/12 and were given four stars as seen within the literature review Table 2.4, whilst five papers achieved 8-9/12 and were given three stars. One paper was underpinned by a positivist paradigm and included for its focus on

learning relationships in a critical care setting (Wagter et al, 2012). The implications of the quality of the papers are discussed in detail within the review, and such details were useful in identifying potential risks to quality for my own study. No paper was excluded on the grounds of score attained, which was supported by Sandelowski and Barroso (2002) who came to this conclusion whilst undertaking a meta-synthesis. They suggest a reflexive approach to such decisions, in order that relevant findings – those not compromised by an assessment of quality and rigor - are not discounted. Those scoring three stars were included due to their specific and relevant focus, that is the MPT handover (Acharya et al, 2014, and Fernando et al, 2013), reference to the ICU setting (Tabari-Khomeiran et al, 2007), learning within MPT specialist teams, including paediatrics (Varpio et al, 2014), and the impact on learning of informal discussions within the physical workspace (Waring and Bishop, 2010). Details from the papers identified are found in the following table, with each paper allocated a number for ease of identification.

	Author(s), date & title	Quality appraisal	Participants (n)	Theoretical lens	Methodology/Methods	Key finding(s)	Identified outcomes of WPL within the study
1	Acharya et al (2014) <i>Do 'trainee-centred ward rounds' help overcome barriers to learning?</i>	***	FY1/2 & S1 (6); Specialist trainees (6); Consultants (6). Ward rounds O&G (UK)	Legitimate Peripheral Participation (LPP)	Ethnographic data; field observations; focus groups; discussions	Learning opportunities self-identified; greater trainee participation; senior medics increased articulation of rationales; concerns re. time constraints unfounded	More explicit LPP; self-directed learning promoted; learning to use the workplace for learning
2	Alcantara et al (2014) <i>Radiologist participation in multi-disciplinary teams in breast cancer improves reflective practice, decision making and isolation</i>	****	Radiologists (10) participating in MPT meetings (Australia)	Experiential learning	Observations; SSIs with radiologists; analysis using grounded theory	Valuable intra- and interprofessional learning; improvements in professional relationships; timely feedback from MPT supported learning; exposure to high volume of images improved learning	Experiential and reflective learning; increased confidence;
3	Bunniss and Kelly (2008) <i>'The unknown becomes the known': collective learning and change in primary care teams</i>	****	Ten Primary Care MPTs - GP practices, pharmacists; dental practitioners (UK)	Collective learning	Interpretive epistemology; observations and SSIs	Notions of collective learning; impact of physical workplace on learning. Learning can be experiential, evolutionary, implicit, responsive to patient need. Knowledge shared for value to patient care	Practical knowledge; team dynamics; learning the benefits of interdependency
4	Bunniss and Kelly (2013) <i>Flux, questions, exclusion and compassion: collective learning in secondary care</i>	****	MPT in Secondary care, including non-clinical staff; 2 clinical areas - OPD & corridors (UK)	Activity theory	Constructionist methodology; interpretivist paradigm; Observations and field interviews	Learning influenced by a spiral of care need and response, arising from unpredictability; adaptive and responsive learning; collective learning gap; desire for improvement	Means by which the wider MPT come together to respond to patient need

	Author(s), date & title	Quality appraisal	Participants (n)	Theoretical lens	Methodology/Methods	Key finding(s)	Identified outcomes of WPL within the study
5	Burford et al (2013) <i>Newly qualified doctors' perceptions of informal learning from nurses</i>	****	Newly qualified doctors in 3 sites (UK)	Professional socialisation	Multiple case studies; thematic analysis	Attitudes to working with nurses; professional hierarchies;	Learning the practicalities of role (skills; patient safety) and prevention of patient error
6	Chatalalsingh and Reeves (2014) <i>Leading team learning: what makes interprofessional teams learn to work well?</i>	****	12 leaders from 2 Inter-professional teams of nephrology clinical staff (Canada)	Leadership theory	Ethnography; inductive thematic analysis; observations; reflections; interviews	Established team members take on leadership roles; day to day learning enabled via positive interprofessional learning culture	Facilitating workplace learning, and learning how to learn using WPL
7	Cuyvers, Donche and Van den Bossche (2016) <i>Learning beyond graduation: exploring newly qualified specialists' entrance into daily practice from a learning perspective</i>	****	New consultants (11) in a range of (unspecified) specialisms (Belgium)	Informal workplace learning	Phenomenographic with Grounded Theory; SSIs	Mechanisms of WPL; WPL as a means to learn professionalism; critical incidents; uncertainty; lack of competence; absence of an 'instant' solution. WPL processes to support learning - inter-acting; doing; observing.	Learning to 'be' a professional
8	Fernando et al (2013) <i>Emergency department multiprofessional handover</i>	***	MPT (all levels of expertise/ experience) in one EM dept. (UK)	None identified	Questionnaire (65/75 contributed); mostly closed Qs with some open-ended.	Handovers can be organised to promote opportunities for multiprofessional learning	None identified
9	Goldman et al (2009) <i>Learning in a chaotic environment</i>	****	Specialist trainees (12) in ED (US)	Chaos Theory; situated learning; emergency medicine	Qualitative case study - SSSIs with thematic analysis	Learning is influenced by participation, 'focused moments', 'repetitive cycles' and 'intense experiences'	learning to learn; learning to be self-directed; learning what works for them as individuals; learning self-motivation. 'The worker is always learning'

	Author(s), date & title	Quality appraisal	Participants (n)	Theoretical lens	Methodology/Methods	Key finding(s)	Identified outcomes of WPL within the study
10	Govranos and Newton (2014) <i>Exploring ward nurses' perceptions of continuing education in clinical settings</i>	****	Interprofessional learning amongst nurses (23) (Australia)	Adult learning; Lifelong learning	Qualitative case study - observations and SSIs; focus groups	Ways of learning in practice (1:1; self-directed; utility of senior staff)	Recommendation: decrease the compartmentalisation of work and learning
11	Gregory et al (2014) <i>Interprofessional learning at work: what spatial theory can tell us about workplace learning in an acute care ward</i>	****	9 nurses, 2-5 years post-qualification (Australia)	Spatial theory - 'space' is not just a 'place'	Qualitative; observations and SSIs	Where (ward round; medical workroom; registrars' room) and how (negotiated and integrated) knowledge arises	N/A
12	Huggins (2004) <i>Lifelong learning – the key to competence in the intensive care unit?</i>	****	Nurses in ICU (9); 9 months - 27 years' experience (UK)	Lifelong Learning - implicit, not explicit	Qualitative - survey, SSQs	Knowledge and skills learned continually via LLL; learning opportunities and outcomes affected by internal, external and patient-focused factors	Knowledge and skills needed for competent practice as critical care nurse
13	Lloyd et al (2014) <i>The New South Wales Allied Health Workplace Learning Study: barriers and enablers to learning in the workplace</i>	****	AHPs (Australia)	WPL	Qualitative - SSIs, focus groups and thematic analysis	Importance of appreciating interconnectedness of work and learning	N/A

	Author(s), date & title	Quality appraisal	Participants (n)	Theoretical lens	Methodology/Methods	Key finding(s)	Identified outcomes of WPL within the study
14	Marshall et al (2013) <i>Clinical credibility and trustworthiness are key characteristics used to identify colleagues from whom to seek information</i>	****	Nurses (22) in ICU (2 sites) looking for support/advice (Australia)	Trust and credibility	Case study; in situ 'think aloud' recordings & interviews	When learning to approach for advice, notions of experience, expertise and approachability are all influential	N/A
15	Muldowney and McKee (2011) <i>Nurses new to intensive care: perceptions of their clinical learning environment</i>	****	Nurses (47) new to ICU (5 sites in Eire)	Clinical Learning Environment	Descriptive quantitative survey	Commitment of nurse manager and clinical educator influence the clinical learning environment, learning culture and interpersonal relationships	N/A
16	Mylopoulos and Farhat (2015) <i>'I can do better': exploring purposeful improvement in daily clinical work</i>	****	Surgical MPT, implementing minimally invasive surgery (Toronto)	Distributed Cognition	Cognitive ethnography; observations; meetings; during surgery; interviews	Adaptive expertise is distributed socially (MPT; patients and families), materially (equipment and physicality) and over time	Integration of individual competencies; integration of individuals within their social and material context
17	Newton et al (2015) <i>A contemporary examination of workplace learning culture</i>	****	Nurses (95) in multiple sites (Australia)	WPL culture/ learning environment	Ethnomethodology; team meetings; interviews; observations	Learning by doing; navigating through communication; 'entrustability'	Learning to use the workplace environment for learning. 'Navigating learning through communication'

	Author(s), date & title	Quality appraisal	Participants (n)	Theoretical lens	Methodology/Methods	Key finding(s)	Identified outcomes of WPL within the study
18	Nisbet et al (2015) <i>Interprofessional team meetings: Opportunities for informal interprofessional learning</i>	****	IP team (doctor, nurse and AHP), 4 in-patient teams, 2 outpatient teams, tertiary hospital (Australia)	Socio-cultural learning	Qualitative interpretivist; observational studies; team meetings; interviews	IP team a source of knowledge; learning through participation; medical influence on IP learning	Subconscious learning; increased understanding of other professions; improved professional relationships.
19	Noble and Hassell (2008) <i>Informal learning in the workplace: what are the environmental barriers for junior hospital pharmacists?</i>	****	Pharmacists (12) in UK	Informal learning	Qualitative SSI	Work practices and work structures cause isolation, and limit learning	N/A
20	Paradis et al (2016) <i>Interprofessional rhetoric and operational realities: an ethnographic study of rounds in four intensive care units</i>	****	Morning inter-professional rounds (MIR) in ICUs (4) in 2 cities (US)	Inter-professional realities	Ethnography	Medical rounds were redesigned into Morning Interprofessional rounds designed to promote increased knowledge diffusion across the team - nurses' responsibilities and workloads were barriers to participating	Practical realities (time and space) impinged on the aim of IP learning via MIR; dual aims of care planning and education weren't always achievable
21	Pearson and Lucas (2011) <i>Engagement and opportunity in clinical learning: Findings from a case study in primary care</i>	****	Primary care team in one setting over a year (UK)	Socio-cultural	Case study: interviews (26) & focus groups (2)	Clinical learning promoted through engagement, via recognition, respect and emotion; and opportunities for learning, via patients, peers and colleagues.	N/A

	Author(s), date & title	Quality appraisal	Participants (n)	Theoretical lens	Methodology/Methods	Key finding(s)	Identified outcomes of WPL within the study
22	Petterson et al (2015) <i>Physiotherapists' stories about professional development</i>	****	Physiotherapists (12) > 10 years' experience (Sweden)	Socio-cultural learning theory	Narrative enquiry with thematic analysis	Learning resulted from failure; continuing contact and interactions with patients; from personal illness/injury. Critical discussion & questions supportive of learning	Increased confidence; improvements in communication strategies and approaches to treatment
23	Pimmer et al (2013) <i>Contextual dynamics in clinical workplaces: learning from doctor-doctor consultations</i>	****	Doctors (17) in 4 hospitals (Switzerland)	Situated learning theory and situated cognition	SSIs and observations	Learner roles: Actor (self-directed) Participant (passive or active observer in the consultation) Student (experiencing deliberate teaching)	Hard knowledge; procedural and cultural knowledge; reflective practice; increased confidence
24	Pimmer et al (2012) <i>Learning through inter- and intradisciplinary problem-solving: using cognitive apprenticeship to analyse doctor-to-doctor consultation</i>	****	Consultants from EM (5) and Specialisms (5); 2 sites (Switzerland)	Socio-cognitive/ cognitive apprenticeship with situated learning theory	Case study - interviews	Intra- and inter-disciplinary learning between consultants in clinical settings; co-operation and problem-solving; barriers to learning - workload and time pressures	Increased depth of understanding of more specialist practice; learning to prevent errors
25	Pyte (2014) <i>What, how and from whom do health care professionals learn during collaboration in palliative home care?</i>	****	MPT GPs and nurses (Belgium)	Collaborative learning	Questionnaires; Cross sectional study	Processes of learning (discussion; reflection; listening and observing). Learning also influenced by patients and families	Psychosocial issues

	Author(s), title & date	Quality appraisal	Participants (n)	Theoretical lens	Methodology/Methods	Key finding(s)	Identified outcomes of WPL within the study
26	Sargeant et al (2006) <i>Learning in practice: Experiences and Perceptions of High-Scoring Physicians</i>	****	Family physicians (25) receiving high scores in formal MSF re. communication (Canada)	Experiential learning theory	Interviews (12) using open-ended questions	Informal learning from patients and colleagues is fundamental. Intentional and reflective learning influential; monitoring the impact of learning.	Make explicit the knowledge, skills and attitudes informally learnt, which are often implicit and invisible.
27	Tabari-Khomeiran et al (2007) <i>Competence Development Among Nurses: The Process of Constant Interaction</i>	***	Nurses (Iran)	Competence development	Grounded theory	Competence development linked to environment (physical & emotional); instances, diversity & opportunities of work activity	Application of theory to practice
28	van de Wiel et al (2011) <i>Exploring deliberate practice in medicine: how do physicians learn in the workplace?</i>	****	Doctors (50) in 2 sites (Netherlands)	Deliberate practice & self-regulation	SSIs	Learning was reactive rather than deliberative and embedded in everyday clinical work	N/A
29	Varpio et al (2014) <i>Resident experiences of informal education: how often, from whom, about what and how</i>	***	Specialist MPTs (2) - paediatrics and palliative care (Canada)	Informal IPL	Observations	Informal learning both inter- and intra-professional should be supported and capitalised upon	N/A
30	Vaughan (2016) <i>Vocational thresholds: developing expertise without certainty in general practice medicine</i>	****	GPs (New Zealand)	Trans-formative learning	Thematic analysis	Highly emotional experiences lead to greater levels of learning and reflection; learning motivated by the desire to 'measure up'.	Dispositional attributes for professional practice; learning to 'be'

	Author(s), title & date	Quality appraisal	Participants (n)	Theoretical lens	Methodology/Methods	Key finding(s)	Identified outcomes of WPL within the study
31	Wagter et al (2012) <i>Informal interprofessional learning: Visualizing the clinical workplace</i>	N/A Quantitative study	MPT ICU/HDU (Netherlands)	Social Network Analysis	Quantitative - survey	Networks identified for sharing knowledge and patient safety issues - who is your 'go-to person'? Influenced by opportunities	N/A
32	Waring and Bishop (2010) <i>"Water cooler" learning. Knowledge sharing at the clinical "backstage" and its contribution to patient safety</i>	***	MPT (UK); 2 Day Surgery Units in 3 locations	Informal Learning	Ethnographic	Situations for informal knowledge sharing; context and content of knowledge-sharing; contributions to knowledge	Practical problem-solving
33	Watling et al (2012) <i>Learning from clinical work: the roles of learning cues and credibility judgements</i>	****	Doctors, <5 years' experience (Canada)		Constructivist grounded theory; SSIs	Learning by doing; learning from role models; learning from cues (patients' clinical outcomes); feedback (colleagues; patients and families). Learning engagement influenced by values and attitudes	Discrimination of actions and behaviours; learning how to learn
34	Wenrich et al (2011) <i>Teachers as learners: The Effect of Bedside Teaching in the Clinical Skills of Clinician-Teachers</i>	****	31 Medical faculty members (US)	Teaching as learning	Longitudinal qualitative study, over 5 years	Teaching deterred clinicians from 'laziness', automated practice, and 'over-reliance on tests and consultations'	Skills improvement; mindful practice; role-modelling

Table 2.4: Details from the papers identified in the literature review

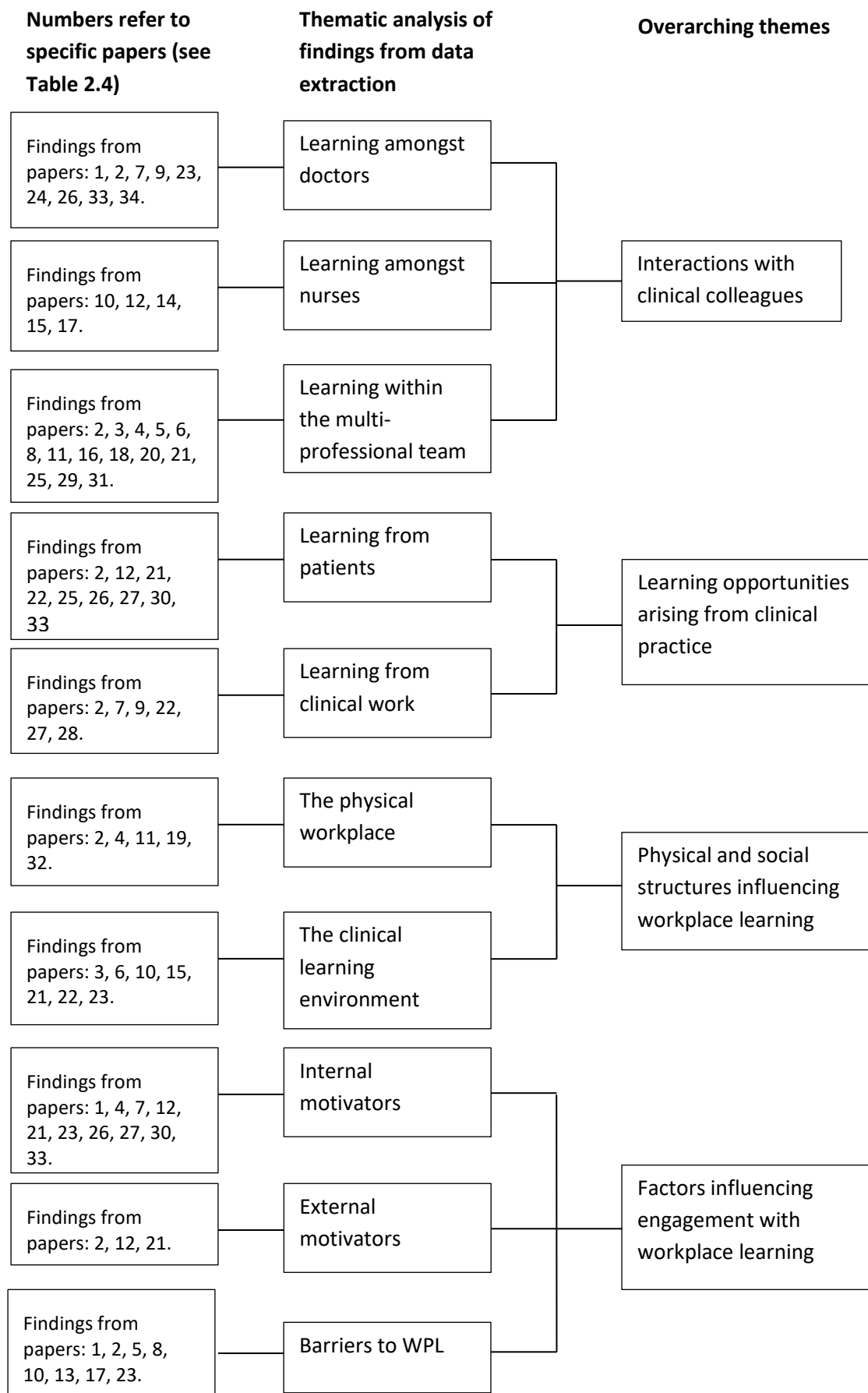


Figure 2.2: Data extraction and thematic analysis from reviewed literature

Following this appraisal, data were extracted from the key findings (Step 3 - identify meaning), then subjected to thematic analysis (Step 4 - give meaning), as proposed by Randolph (2009). The themes were then grouped into over-arching themes to address the review questions, as shown in Figure 2.2. Finally, Step 5: Thick rich description, is addressed by the detail included in the full literature review.

2.2 A critical review of clinical workplace learning research

Thirty-four papers were included in this review. Following the extraction of data from these papers, the thematic analysis identified that informal WPL in the clinical setting arose from interactions with colleagues, and was influenced by the patients and clinical practice, and by the physical, social and cultural elements within each specific context. The interactions or engagements with colleagues can be described as intraprofessional (within the same professional group), or interprofessional (between those of different professions), and similarly inter- and intra-disciplinary, when taking into consideration different clinical specialisms. The format of this review follows the structure of the thematic analysis, critiquing each in turn. Some studies had findings which were present in more than one theme, in which case the critical appraisal is explicated where the paper is first cited.

2.3 Interactions with clinical colleagues

This theme relates to findings from the studies which relate to the learning which takes place between clinical colleagues. These interactions ensue within natural opportunities during everyday practice. This theme is further subdivided to specifically explore workplace learning as experienced between doctors, between nurses, and between the wider MPT.

2.3.1 Learning amongst doctors

Learning amongst doctors can occur because of formal working relationships within the same team or discipline or emerge naturally when patients require the input of more than one specialism. In the following studies, doctors are learning from each other within a range of clinical situations. The relevance of WPL is experienced and recognised both by post-graduate specialist trainees, and by those in senior clinical roles (consultants and general practitioners) who have completed formal post-graduate education.

The learning of emergency residents in their clinical setting (the equivalent of specialist trainee doctors in Emergency Medicine in the UK) was the subject of qualitative case study research undertaken in the UK by Goldman et al (2009). Data were obtained from 12 participants (with experience within this specialism ranging between one and three years) who took part in semi-structured interviews. The authors described the environment (from a theoretical perspective) as being as chaotic, and comparable to other contexts such as that of critical care. Situated learning, chaos theory and emergency medicine theory informed the research, with the strengths and limitations of each specific theory identified. The argument for all to be included was well-articulated. As to what constitutes learning was left undefined 'so as not to limit or bias their [the participants'] interpretation' (Goldman et al, 2009 p. 562).

The authors determined that learning arose from specific situations, identified in detail where relevant later within this review. Of relevance here is that the study found that participants identified the key learning relationship during this context to be between the participants themselves and the attending physician – impacting on and influencing learning between doctors. The participants gained an understanding of others' expectations of how they should enact their role and gained growth in self-awareness. However, Goldman et al (2009) felt the most significant finding to be learning the importance of self-direction, as summed up by this participant *'It's dependent on how much I put into it or what I do with the time and experiences I have that will result in learning ... The main factor is self-motivation'* (Goldman et al, 2009 p.568). Findings were well-structured and aligned to the aims of the study and the underpinning conceptual framework. Self-identified limitations included the self-selection of participants, which was mitigated by presenting the findings to the wider specialist training team. However, it might be difficult to disagree in such an open environment. Nevertheless, the rich and detailed description and creative presentation of conclusions define the quality of this study.

Pimmer et al (2012) give examples of learning between consultants from different specialisms, using narrative enquiry with thematic analysis as the study methodology. Participants were five Emergency Medicine (EM) consultants and five from other specialisms, situated in two sites in Switzerland. The EM consultants described opportunities arising from unusual or more complex clinical problems, whereby they would consult another more expert, experienced or specialist doctor for

advice or support. Valuable learning occurred as a result of this cooperation and joint problem-solving, by way of an increased depth of understanding and in some situations prevention of error. There were examples of the means and processes of support of learning in this context, using all elements of the cognitive apprenticeship model (modelling, coaching, scaffolding, articulation, reflection and exploration, Collins et al, 1991), promoted by reflective learning. The central importance of this was demonstrated, for example from this response: *'I'd say it [learning from consultant colleagues in the clinical workplace] is among the most relevant for learning ... the joint treatment of patients in the emergency ward was the most instructive of the things I've had to do since my exams'* (Pimmer et al, 2012, p.766).

The cognitive apprenticeship model was not always deliberately or knowingly applied, and the authors argue that making this more explicit could enhance learning opportunities. The ethos of this model is to 'make thinking visible', thus arguably, by default, learning could then become more visible to both the learner and the teacher. Pimmer et al (2012) suggest further research could focus on other multiprofessional settings, and also through alternative socio-cultural and situated theoretical lenses which would add to these findings.

One of the research team was a doctor (a medical educator), with work experience in two of the clinical sites. This was argued to be of benefit due to the ability to interpret findings, particularly socio-cultural and political issues, from an insider perspective. The other researchers were outside of the specific clinical settings and so could question any taken-for-granted perspectives. The relevance and importance of this could have been enhanced by giving specific examples of where this had occurred.

With a somewhat similar focus, Alcantara et al (2014) investigated the experiences of Australian radiologists. Their study gained data from these radiologists, via observations of multiprofessional oncology meetings, followed by semi-structured interviews, analysed using grounded theory. Twenty-five radiologists were present at the meetings although only ten were willing or able to take part in the interviews, with time factors cited as a barrier.

They experienced benefits from their inclusion in discussions amongst consultant oncologists and pathologists, by way of opportunities not only to share experiences and deepen relationships, but also to learn from such active participation in team meetings. Experiential learning was evident, with radiologists' confidence

increased following timely feedback which supported their continued learning. For example, one revealed that *'I like attending (because of) ... the obvious feedback, in terms of your lesion detection ... but also getting to know the surgeons ... the oncologists'* (Alcantara et al, 2014 p. 620). The aim of this study gave a specific focus to the radiologists, as opposed to including the other members of the MPT, a limitation identified by the researchers, but argued for as relevant to gain an in-depth appreciation of this perspective. It is unclear whether there were any professional connections between the research team and the participant radiologists as this was not commented on within the paper. Nevertheless, the strength of the findings was enhanced by detailed structure of the quality of the data analysis.

Cuyvers et al (2016) also focused on the continued learning of senior doctors, in this case newly appointed consultants in Belgium. The aim of the study was to gain increased understanding of WPL as experienced by this group. Eleven participants were recruited, working in a number of indeterminate specialisms. This was a phenomenographic study, using a grounded theory approach, with data gained via semi structured interviews. Participants were asked to recall and reflect on three work-related critical incidents, and then discuss in depth their approaches to overcoming such problems or uncertainties, with regard to who was involved and why.

Once taking on the consultant role, the doctors were somewhat outside of supervision and a formal curriculum. The most common WPL process identified involved interacting with other doctors, predominantly within their specialist field, though those outside of their field were also a source of learning. Consulting fellow physicians with expertise or authority gained feedback, and a forum for articulation for their concerns and joint reflection. There was a reference to engaging with other healthcare professionals, such as nurses, social workers or psychologists, but this was not elaborated upon. Participants referred to their changing role as a consultant, but the example cited was that of becoming an assessor of junior doctors – their role within the wider health care team was not acknowledged to be a learning challenge, which could arguably be due to good interprofessional working relations, or alternatively an unacknowledged area for learning. The researchers gave an in-depth exploration of the limitations of this study - for example, data was self-reported. However, an area of concern regarding the duty of care to participants centred on the lack of

acknowledgement of the potential challenge of remembering and reflecting on a problematic situation.

The relationships between learner and facilitator can take different forms, and a further observational study with additional interview data reported by Pimmer et al (2013) explored the informal, unstructured learning dynamics encountered in doctor-to-doctor interactions. Seventeen doctors (consultants and specialist trainees), from four different hospitals in Switzerland took part in the study. The interactions included consultant-consultant as well as consultant-trainee. From their results, they identified certain learner roles within these interactions, viz. the Actor, the Participant and the Student, none of which were necessarily specific to a level of seniority.

The Actor, was exemplified by a high degree of self-directed learning, exhibited by a proactive and detailed approach, welcoming the challenge of critical questioning. The Participant learned by being part of a consultation, sometimes as a passive observer, whilst at other times more actively involved in questioning the more experienced doctors. And finally, the Student, who learnt from deliberate teaching, beyond that required to manage patients. The outcomes of learning included hard knowledge, but also what the authors refer to as procedural and cultural knowledge, as in how practices are enacted in a specific clinical area, thus the locus of learning was contained within the specific work context. Reflective practice and greater confidence were also positive developments. The study provided a novel perspective on doctor-to-doctor learning and motivation. Specific strengths included the depth and range of data to support the findings, and the multiprofessional experiences of the research team, including linguists and generic educationalists. Self-identified limitations included the study being conducted in one site, although this could be presented as a positive feature, allowing for depth rather than breadth.

A study from Sargeant et al (2006) explored the experiences of family physicians from Canada who had received high scores on a multi-source feedback assessment. Of the 142 taking part in this exercise, 25 were invited to participate in the study, with 12 responding positively. Data were obtained via interviews using open questions which were sent to participants in advance to encourage reflection. The study used the theoretical perspective of informal learning and focused particularly on communication skills. Findings identified that learning relationships between colleagues was fundamental, and resulted from professional interactions, including the letters and

reports the GPs received from colleagues. Learning was reflective and intentional, with these physicians actively monitoring its impact. Availability of fellow colleagues facilitated learning, but interactions with specialist consultants were also identified as an important means of learning. Motivation to continue to learn was supported by their curiosity and self-awareness, and their harnessing of learning opportunities. An interesting finding was that half of participants considered communication skills to be an innate character trait. Although not discussed this might be a feature of the age profile. While the number of participants was small, the research team reported data saturation.

A more specific focus for learning was the initiation of trainee-led ward rounds, which were found to improve workplace learning as experienced by junior doctors. This was the outcome of a pilot study reported by Acharya et al (2014). This intervention was premised on the theoretical concept of 'Legitimate Peripheral Participation' and identified a more explicit adoption of this form of learning. Participant data from 18 doctors, all working within one obstetric delivery suite, were collected from across all medical grades – with six each of junior doctors, registrars and consultants taking part. Data were resultant from informal discussions and field notes, in addition to the recordings from faculty debriefing sessions.

The change to the organisation of the ward round resulted in the junior doctors being given greater and more specific responsibilities prior to the round. Learning developed from having a greater contribution to the care planning and evaluation and was reinforced by the feedback given. These rounds were medically focused, rather than multi-professional, with learning opportunities identified and discussed prior to the round. Concerns over time constraints from both trainees and consultants were largely unfounded, since whilst the junior doctors were each reviewing a patient, the consultant was doing likewise with another. Following this the junior presented their assessment and plan, which was then discussed with all participants.

A more active role in the ward round led to increased ability to harness learning opportunities and developed self-directed learning skills amongst the junior doctors. In addition, the senior doctors were also moved to more explicitly articulate their thoughts and rationale for their clinical decisions. Both junior and senior medical staff reported an increase in enjoyment and job satisfaction, with one consultant reporting *'It was nice to see the old tradition of apprentice and teacher back in action, where the juniors*

actually were interested and saw the importance of the teaching in order to affect clinical practice. I thoroughly enjoyed it' (Acharya et al, 2014, p.586).

Self-reported limitations acknowledged its specific context, and that this was a pilot study. Departmental approval was gained, but there was no requirement for formal ethics approval, however, consent was gained from all participants. That said, the researchers were part of the medical team, and whilst the benefits of the insider perspective were identified, there was no reported discussion of the risk of bias due to this relationship, nor the need for reflexivity. Recommendations for further studies suggested alternative positivist approaches, using a control group, particularly for comparisons of time taken on a traditional ward round as opposed to a trainee-led one, as being 'vital in demonstrating utility' (Acharya et al 2014, p.587). Further development of this pilot study using an interpretivist paradigm seems a missed opportunity for this viewpoint.

From a different perspective, Wenrich et al (2011) identified the personal benefits to be gained from teaching in the clinical workplace. This was a longitudinal qualitative study, involving 31 medical faculty members. Such benefits included the expansion of knowledge and skills, and a greater degree of self-reflection, largely due to recognition of being a role model. Teaching also required the faculty members to deconstruct and break down their practice into smaller components to enable them to teach more junior doctors. This more thoughtful practice (and the opportunity for more mindful practice) led participants to conclude that teaching had a positive impact on their own clinical skills. The key strength of this study was that it was longitudinal, following participants for 5 years, and undertaking 4 interviews. Final data were obtained from focus groups but were not reported. Self-identified limitations included the self-reporting nature of clinical skills, however, this was a novel and well-reported study.

Finally, in a study situated in Canada, Watling et al (2012) investigated the learning processes of doctors with less than five years' experience. The research team considered that this time frame would be recent enough for participants to remember what they had learnt, whilst giving a suitable period of time for reflection to have occurred. Twenty-two participants were included, with data gained from semi-structured interviews. The design used a constructivist grounded theory approach. Included in the paper was a clear account of the data analysis. Identifying data

saturation, and a move from categorical to conceptual analysis were key strengths of the study.

When practicing in the clinical workplace, Watling et al (2012) found that some relatively junior doctors learnt from comparing and calibrating their own level of practice with that of their peers, as well as observing the practice of other more experienced colleagues. These doctors also reported the benefits of learning by gaining feedback from their seniors. These participants specifically identified the benefits of more senior role models (for positive or negative reasons) who incidentally may not have known they were being appraised in this way. The outcomes of such learning included discriminating between actions and behaviours that should be integrated into their practice – in effect learning how to learn from practice, as well as learning how to ‘be’ that professional doctor. This outcome was also noted by Pimmer et al (2013).

Limitations to their study, as identified by Watling et al (2012), suggested that recruiting volunteers from a single site could limit transferability, but that participants were representative of a range of specialisms. It is not clear, given the aims of the study, as to why this was a limitation, given the focus on individuals’ experiences, although specific context and learning cultures could have been influential.

Summary of theme: Learning amongst doctors

Within this theme, the doctor-participants identify the importance of professional relationships to support learning (Sargeant et al, 2006; Goldman, 2009; Alcantara et al, 2014), and the learning opportunities that everyday work practices bring by way of problem-solving (Pimmer, 2012), role-modelling (Watling et al, 2012; Pimmer et al, 2013), teaching others (Wenrich et al, 2011) and taking part in the ward round (Acharya et al, 2014). In addition, those participants in the study undertaken by Cuyvers (2016) identified the challenge of having moved beyond a formal curriculum.

2.3.2 Learning amongst nurses

Postgraduate development of nurses is generally less structured and formalised than that of their medical colleagues, and with WPL tending to occur in their one specific place of work, as opposed to the doctors who may have patients in more than one setting, such as wards, clinics and theatres. The following findings identify ways in which

nurses may experience informal interprofessional learning processes within the workplace.

A small study from Huggins (2004) was sited in an ICU in the UK. Nineteen nurses were invited to complete a questionnaire, but only six took part. The grades of these nurses were reported as representative of the nursing team – that, and the data obtained were justification for its inclusion in this review. The nurses had worked on the Unit for between five months and 27 years. The survey contained semi-structured questions which were analysed qualitatively, through the theoretical lens of lifelong learning.

Three key themes emerged from this data – related to learning, opportunity and outcome, which in turn were affected by internal and external factors, and in addition the needs of the patient. Huggins (2004) found that nurses appreciated the necessity for continued lifelong learning and that this was driven by internal and external motivators, (discussed in detail later under the relevant theme in this critical review). Opportunities for learning were influenced not only by this motivation, but also the extent to which learning from colleagues and situations in the clinical area was promoted. Nurses learnt from their peers and specialist nurses, and from their mentors and role models – the relationship between the learner and their colleague was influential in this respect, and dependent on approachability, and their willingness and capability to teach. This facilitation and teaching deepened understanding with one nurse acknowledging that *‘without the knowledge of why you are performing the skills, you are unable to perform them competently’* (Huggins, 2004 p. 40).

The questions posed within the survey were not included in the report which limited the quality of this paper. Although small-scale in nature, this paper gives a nursing perspective of informal learning within the ICU, which adds to findings from other papers, and our overall understanding of this phenomenon.

Learning consequential to the clinical decision-making of nurses, also in the intensive care setting, was investigated by Marshall et al (2013) who used a case study methodology. An interesting method of data collection included the use of a microphone to capture ‘think-aloud’ thought processes. Participants included six nurses, with at least a year’s experience, from each of two adult intensive care units in Australia, who were in the ‘think aloud’ group. Audio data came from the microphones, and subsequent interviews were transcribed to gain further insights. Contributing to the

data analysis by way of focus group discussions were seven senior nurses from one unit and three from the other, all of whom had responsibility for education, research and management.

The authors found that when looking for support and advice, the participants judged the creditworthiness of the information based on an evaluation of the individual over an evaluation of the advice given. Characteristics of the advice giver included their experience and role, the extent of their trustworthiness, and their approachability. For example, *'... even senior people that you ask, some you can sort of ... you know that they know what they're talking about and others you think, I'm really not too sure'* (Marshall et al, 2013, p.1427). Learning who to access for guidance in clinical decision-making is clearly an important element of learning in practice, which can be guided by subjective notions of experience and expertise, as well as personal traits such as approachability. This, they argue, has the potential to be a less robust and reliable approach to workplace learning.

Regarding the data collection methods, rather surprisingly no mention was made of the risks to patient confidentiality when audio recording within the clinical environment. Data were anonymised prior to the focus group, though issues of identifiability were not specifically addressed.

Moving away from the intensive care setting, Govranos and Newton (2014) explored nurses' values and perceptions of continuing education in relation to opportunities in the clinical workplace. They used a case study methodology which was situated on a specific ward in a tertiary setting in Australia. Fifty nurses were eligible to take part, of which 23 did so by way of four focus groups, following which six of the participants took part in individual semi-structured interviews. Ten nurses had less than a year's experience on the ward, with a further 11 having worked there for between one and five years. Theoretical lenses used were those of adult learning and lifelong learning.

Three central themes emerged from the data, relating to culture and attitudes, perceptions of learning ('what is learning?'), and visibility of the nurse manager and clinical educator ('being there-being seen'). One-to-one learning, self-directed learning, and utilising senior staff and the clinical nurse educator were identified as ways of learning in practice, but often required additional resources. Thus, the desire for continued learning was clearly in evidence, with the authors recommending that the compartmentalising of work and learning should be lessened, since 'on a good ward,

everyone has a role in education’ (Govranos and Newton, 2014 p.658). A strength of this study was that it highlighted the range of sometimes opposing views identifying the tension within the workplace regarding the support of learning, as well as the inherent need to provide patient care.

Workplace learning culture was the focus of a study, reported by Newton et al (2015). This focused on the experiences of 95 nurses - students and qualified – across multiple sites in Victoria, Australia. Data were obtained using ethnomethodology, gaining snapshots of everyday practice via interviews and observations. Learning by ‘doing’ was the preferred method of learning of both students and postgraduate nurses. If this was new learning, then teaching and support in practice by one more experienced was preferable to learning from paper or electronic resources. One of the qualified nurses reported that *‘I like someone who has experience – I like them to go through it with me ... I like to have a go’* (Newton et al, 2015 p.93). The second theme, ‘Navigating learning through communication’ was found to be fundamental to support ‘learning by doing’, and was exemplified by informal friendly exchanges, and feeling able to request for help. Understanding the importance of such casual interactions is important for maintaining the quality of the clinical learning environment. Finally, the third theme, entrustability, enabled supervision to be calibrated to the level required to support learning whilst maintaining patient safety. This was sometimes difficult to ascertain, as illustrated by another qualified nurse here – *‘It depends on the staffing ... a lot of bank staff ... makes it harder to see who you can trust’* (Newton et al, 2015 p.95).

The credibility of these findings was enhanced by the extent of the self-reported limitations, which acknowledged that one of the research team held a senior role within the organisation which could have influenced responses. However, the means to limit this were not identified or disclosed.

Summary of theme: Learning amongst nurses

Postgraduate nurse-focused studies from the UK were under-represented, with only one of these papers situated here. One was located in Eire and three in Australia. Nevertheless, there are similarities in the findings from these papers which demonstrate the underlying commitment to the ethos of WPL (specifically Huggins et al, 2004), the importance of self-directed learning (Govranos and Newton, 2014) and a similar degree of commitment to their continuing development, found in all papers. Learning in these studies was facilitated by their peers as well as more experienced nursing colleagues

and specialist nurses (Huggins et al, 2004; Govranos and Newton, 2014), which was in turn affected by approachability and personal relationships, again found in all papers. Risks to informal learning arise from the reliance nurse-learners have on their ability to make judgments regarding the trustworthiness of the guidance and advice from colleagues (Marshall et al, 2013; Newton et al, 2015), and the preference for learning by doing, which required support in order to promote patient safety (Newton et al, 2015).

2.3.3 Learning within the multiprofessional team

Within these studies is the recognition that care is often managed and delivered by multiprofessional team members, who work together, bringing their individual and collective expertise to bear. These findings identify learning relationships within the MPT, the learning opportunities afforded by such interactions, and instances of an appreciation of the expertise of colleagues outside of one's own profession.

Continued informal workplace learning may be influenced by changes in practice. Bunniss and Kelly (2008) undertook an interpretive study using observations and semi-structured interviews, amongst ten Primary Care teams in Scotland. Teams centred in GP practices who had recently undergone whole-team learning were invited to take part via an online questionnaire, from which four teams were recruited. In addition, the pharmacy teams (n=3) and dental practices (n=3) were recruited using organisational contacts. Data were obtained from team observations and semi-structured interviews, over the course of a year.

Collective learning was found to be unpredictable and unconscious, with the outcomes of such learning including the further development of interpersonal skills, as well as learning how to cope with difficult or uncertain situations. Bunniss and Kelly (2008) also reported evidence of interdependency, with team members learning to draw on each other's expertise. The authors found there to be consistency across the teams, as to its specific value, despite the professional groupings and settings being dissimilar. Informal workplace learning was felt to be of greater importance than more formal learning, which was thought to be less relevant to their daily work. It (informal workplace learning) represents the 'coping mechanism' that underpins everything they do (Bunniss and Kelly, 2008 p.1188).

Learning also occurred through experience, by way of observing, questioning and practising, and was internally generated by the team, for example a pharmacy technician explained that *'You help each other if you're stuck ... [a technician] supports me, and I'll*

be [a colleague's] support person because there's things I know. Technicians will help the pharmacist' (Bunniss and Kelly, 2008 p. 1188). In addition, learning was found to be evolutionary, which could be challenging due to its uncertainty, especially during times of change. However, workplace unpredictability was also recognised to be of value, since it demonstrated responsiveness to patient need, and could bring other benefits, with a practice managing reflecting that *'There was no time to rehearse and fail. We just tried things, and through the process became aware that we were capable of some very good work'* (Bunniss and Kelly, 2008 p.1189). Learning was also implicit and intuitive as a result of working together as a team over time, with one dentist remarking *'People probably don't think "I'm here and I'm learning" ...'* (Bunniss and Kelly, 2008 p.1190). Knowledge was shared for its value to patients, not due to external motivators, challenging the view for the need of external management or monitoring. As well as practical knowledge, what was equally if not more important was an understanding of team dynamics and learning how best to work together.

Bunniss and Kelly (2008) identify a crucially important finding from this study – the specific value of learning within the dynamic setting of clinical practice. They argue that regulation and structure of such learning could be counter-productive and led to a less responsive approach to care. They also acknowledge that such daily informal learning may be less visible but significant, and worthy of further research.

This paper identified the social and participatory nature of learning in the workplace, citing theories and theorists such as Situated Learning Theory and Communities of Practice (Lave and Wenger, 1991), but made limited reference to such theory within their discussion which could have increased still further its quality and value. Although the aim of the study was to obtain a range of experiences, greater comparison or contrast and an appreciation of consensus could also have added an additional dimension. However, individual responses were effective in illustrating the themes.

Learning across the Primary Care team was also the focus for a case study undertaken by Pearson and Lucas (2011), where 33 participants represented a range of professions, which included undergraduate and post-graduate learners. Data came primarily from individual interviews, and additionally from focus groups. Further data was obtained from observations and documents. This study used a socio-cultural theoretical lens through which to view the findings, with the arguments for this

theoretical framing, and the different backgrounds and perspectives of participants well-elucidated.

Findings identified the importance of engagement, which was encouraged by the recognition of the individual as a team member – and a culture of respectfulness which was role-modelled across the team and recognised by learners and colleagues alike, as shown by this response from one of the nurses *‘Everybody is so friendly ... you can talk to anybody’* (Pearson and Lucas, 2011 p.e672). There was an ethos within the practice which promoted a commitment to care provision, which appeared to drive support of learning. Learners also appreciated the quality of the learning opportunities, and that the educators understood and made explicit what was required, responding to the learners as individuals on an emotional level.

Of additional importance is how opportunities to learn from colleagues and patients are facilitated. One of the GPs identified that *‘I learn from feedback from consultants or colleagues within the practice. We all feel that we can approach each other’* (Pearson and Lucas, 2011 p.e674). with comparable findings across the professions. Akin to findings from Alcantara et al (2013), the volume of patients was also supportive of learning, as was their authenticity – the reality of multiple problems, or of complexity not encountered in a text book.

The discussion of findings is clearly interpreted through the theoretical lens of socio-cultural learning. Although largely reinforcing such theoretical constructs, the importance of the emotional and personal impact of the learning relationship was particularly made evident. Since this literature review was focused on informal post-graduate learning, this appraisal and the examples identified are from such learners. However, the findings from this study were equally relevant across all levels and descriptors of ‘learner’, including permanent and established members of the practice. The design of a model to illustrate the connectivity of these findings was an additional strength.

Likewise, within a community setting, palliative home care teams were the subject of research from Pype et al (2014). This was a large-scale study centred in Belgium, with 267 GPs (42% response) and 73 nurses (100% response) completing questionnaires over a period of three months, to determine what and how they learned during collaborative practice, and from whom. The questionnaire design was based on the palliative care postgraduate curriculum, with its development and approval clearly

explained. Participants were able to complete multiple questionnaires, but only the first one for each participant was included in the data – which explained the high completion rates, particularly from the nurses. The rationale for this study was premised on a lack of empirical evidence for the ways in which professionals might learn through inter-professional collaboration.

Discussion and reflection, listening and observing were all found to be processes of learning, related to the psychosocial and physical elements of palliative care. Both the GPs identified the benefits of learning from each other. However, the GPs learned more from the nurses by a factor of 2:1 – possibly since the nurses were specialists in palliative care. The comparable response rates of the GPs and nurses were not commented on within this paper.

Self-identified limitations included the content of the questionnaires, due to disparities over the number of questions related to psychosocial issues (n=29) as opposed to team items (n=2) and the lack of opportunity to determine the detail of interprofessional dynamics. Despite limitations of the use of a questionnaire per se (such as potential lack of individual detail in the responses) using Eraut's typology of learning within the design of this survey seemed to overcome such issues (Eraut, 2007). For example, one response was that *'GP was present when the [Palliative Care] nurse had a difficult conversation with the patient' and 'he learned a new way of addressing a patient's fear'* (Pype et al, 2014 p.3).

Building on their earlier study in primary care, Bunniss and Kelly (2013) designed a constructionist methodology with an interpretivist framework to explore collective learning in secondary care. Data were obtained from observations in the clinical settings (a medical ward, a chronic ward, and out-patient department, and the inter-linking corridors), and 17 field interviews, and over the course of three months. Professional, clerical and ancillary workers were participants in this study. Some staff worked in specific areas whereas for others, their work was across different physical settings. This led to a constant state of flux between patient needs, and staff and patient movement.

There were many instances of shared learning because of work situations and challenges, and problem-solving, for example *'there's going to be times every day when I'm out of my depth and you always need to know who to ask for advice ... that is really important to have that utility.'* (Bunniss and Kelly, 2013 p. 1201). They found that adaptive and responsive learning resulted from seeing, doing, and asking questions, with

interpersonal skills seen as requisite for learning. The implicitness of informal WPL is typified by the response of one of the junior doctors who acknowledged that *'You don't realise you're learning until later on you see a patient with a similar case a few months down the line and you feel more confident next time'* (Bunniss and Kelly, 2013 p. 1201). Questioning was particularly utilised and encouraged by the medical staff. However, they found that doctors, particularly senior doctors, were often excluded from these problem-solving activities when the issue was deemed not important enough to include them. This may or may not be limiting their ongoing learning, as this was not discussed further.

Participants working across different settings noted the extent to which different areas valued and supported collective learning, or 'team spirit'. Quotes from non-clinical staff are used to support this finding, so it is unclear as to whether the clinical staff also find this to be the case. Bunniss and Kelly (2013) recognise that, in contrast to their study in primary care, (Bunniss and Kelly, 2008) teams within the secondary care environment can be impermanent, with less opportunity for collective learning and understanding without a shared history to draw on.

This study design and its subsequent findings recognised the complexity, flexibility, and indeed web-like nature of healthcare teams. Activity Theory and specifically 'knot-working' (Engeström, 2011) was used to frame and aid understanding of the informal and collaborative nature of clinical practice. The relevance of this is that individuals may be included or excluded in such activity, (influenced by their roles and responsibilities) which may in turn support or limit learning. Although the aim was to obtain a range of experiences, the data were not used to compare and contrast such experiences, nor indeed gave indications of how much consensus occurred. Nevertheless, individual responses were used to good effect to illustrate the themes.

Learning within the MPT can occur within specific situations where staff assemble, such as ward rounds, handovers and team meetings. A study by Fernando et al (2013) used questionnaires to gain data from the MPT in an Emergency Department (ED) in the UK, with all 75 staff having completed this survey. Most questions were closed, with the content of the questionnaire included in the report, although there were some opportunities for free text.

The ED had instituted the multiprofessional handover as a source for education opportunity, by way of the use of a '[PowerPoint] slide for the day' as well as

practicalities detailed in a more structured format for handover information. This was delivered by either a senior doctor or nurse, and was well-received by staff, who recognised the interprofessional learning opportunities it engendered. Some negative findings identified it as too lengthy for those having worked a night shift. In addition, the large group environment was felt to be a potentially intimidating forum in which to ask questions and acknowledge learning needs.

The academic content of this study could have been enhanced with the inclusion of learning theory or a conceptual model – case-based learning is mentioned, but not further elucidated. In addition, the 100% response rate may have been influenced by the questionnaire being handed out on entering the room – there is no mention of how and when they were collected. That said, the data would suggest this intervention has successfully harnessed an opportunity to promote interprofessional learning in this context.

Within the critical care setting, Paradis et al (2016) researched the use of Morning Interprofessional Rounds (MIR). Four ICUs in two US cities were the sites for this research. This study used an ethnographical methodology and described a well-conducted and clear review of the method. Data were collected over a year, via observations and 40 interviews.

These rounds had a twofold purpose – interprofessional care and management of patients, as well as learning opportunities, and were supported in principle by all involved. However, operational issues impacted on these aims, which frequently led to them reverting to the previous medical model, and privileged junior doctors' learning over other individuals and professional groups. For the nurses, they were often having to manage their patients and the Unit alongside participating in the rounds. Two models to promote the nursing perspective were attempted – one where there was a scripted contribution by way of a template, with the alternative being that nurses contributed as they saw fit, dependent on their patient and the relationship they had with the lead physician. Both had their advantages and challenges, which again brings into focus the interpersonal dynamics influencing workplace learning.

One of the conclusions from this study was to suggest the need to investigate and identify the potential for other models to improve their implementation. However, a key issue in this situation would seem to be the unresolved tension between providing

care, and the extent to which opportunities for learning may be supported and facilitated whilst doing so.

Amongst other situations, team meetings were found to be a source of informal learning, also reported earlier in the critique of the study from Pearson and Lucas (2011). For Nisbet et al (2015), this was the key focus of a qualitative interpretative study, centred on a tertiary hospital setting (both in-patient and out-patient teams), in Australia. The teams represented the individuals within the MPT (doctor, nurse and allied health professional), and each were from one specialism to simplify the context. Socio-cultural learning theory guided the research, which demonstrated potential learning pathways, both individually, and across the team. Researchers attended team meetings, then interviewed the participants independently. Data were thematically analysed, identifying four key themes.

There was some variance in the concept of learning arising from the team meeting, as to whether this was a direct by-product of the meeting. This was explained by a doctor here *'I can see where they're coming from, they can see what I deliver, we mutually learn'* (Nisbet et al 2015, p. 427). An alternative view was that learning was of lesser importance, as described by this pharmacist *'I wouldn't say we're here for the purpose of learning. It's more a necessity really for everyone to be able to do their job'* (Nisbet et al 2015, p. 427).

Teams had the potential to be a source of knowledge, with learning occurring from participation in clinical practice and from the influence of individual team members. Discussion provided opportunities to observe, listen and ask questions. For some this led to almost subconscious learning, whereas for others this was a more explicit learning opportunity. One team sought to encourage learning as part of the team meeting remit. This was often academic in nature and initiated by discussing relevant papers and research findings. Also identified were the opportunities to understand and gain insight into the practice of different professionals, as one doctor revealed *'through being more attuned to everyone's workstyle and what they preferred, their practice'* (Nisbet et al, 2015 p.428).

The authors identified the theme 'learning through participation' as being particularly strong. However, participation was influenced by personal confidence, and an environment which encouraged and role-modelled active participation and learning,

as evidenced here: *'She's a good model in a sense because we all don't hesitate in asking questions when we don't understand things'* (Nisbet et al, 2015 p.429).

Interestingly, nurses and physiotherapists felt that the medical model dominated events, whilst findings from the doctors' interviews suggested otherwise, and indicated that they learned from other professionals' input and insight. This is borne out in the interview data from clinicians with in the same teams, with a physiotherapist explaining that the meeting *'clearly defines what's happening from a medical point of view, but clearly doesn't branch outside of that clinical viewpoint'* whilst a doctor states that *'I want to know more about why physiotherapists conclude definitively that this person will never get home. Whereas they look quite kind of quite good to me. Uhm, what makes them think that. Uhm, so it just kinds of expands my knowledge'* (Nisbet et al, 2015 p.430). The authors hypothesised that previously held attitudes of nurses (and indeed physiotherapists) may need adjusting.

Such interprofessional learning in these meetings had added benefits to the ways in which staff worked together in the clinical setting. Participants indicated they were more likely to engage in consultation and discussion having previously developed a professional relationship. In addition, gaining collective knowledge and practical wisdom was an important outcome of such learning. Self-identified limitations from the Nisbet et al (2015) study included the specific focus of the interprofessional team meeting, although arguably informal interprofessional workplace learning benefits from studies focussing on the specific as well as the more wide-ranging situations. Although the health professionals attending these meetings were representative of the wider MPT, it was not clear from the study if all *levels* of staff, for example junior nurses and possibly doctors, had the opportunity to attend, comparable to the challenges identified in the study from Paradis et al (2016), regarding inclusion in the morning ward round.

Whilst learning opportunities between doctors have previously been identified from their study of radiologists, in addition, Alcantara et al (2014) also found that learning also occurred from interactions with other professional groups, when taking part in MPT meetings. These radiologists identified the specific importance of this networking opportunity which led to greater understanding of the different roles within the MPT through sharing experiences and information.

Newly qualified doctors have the challenge of transferring their skills and knowledge, and transitioning into a new role, whereby interprofessional dynamics are

also of relevance. Using multiple cases studies from three medical schools and applying a thematic analysis, Burford et al (2013) investigated the extent to which informal learning from nurses was part of this process. Informants were interviewed three times in their first postgraduate year, firstly face-to-face, then by telephone. Interviewers were social scientists, with no medical training.

This study identified how greater understanding of the dynamics and culture of workplace learning amongst professionals can benefit not only the clinicians but also positively impact on patient safety. Informal learning was important as the doctors developed their skills, as exemplified here - *'I've got to learn this stuff, so ... you go and see nurses ... they're quite good at teaching'* (Burford et al, 2013 p. 397). Such activities also contributed to patient safety, by way of nurses preventing potential errors. Results identified what the authors termed a 'dynamic hierarchy' whereby these doctors initially recognised the more experienced nurses' expertise, but that as the doctors became socialised into their role, this was a potential cause of confusion, depending on local ways of working - *'I think sometimes you're unaware of where you stand ... a lot of the senior nursing staff probably have more seniority compared to the medical staff junior wise, but you don't know for example who has more authority'* (Burford et al, 2013 p. 397). As they developed into their roles, they learnt how and when to be more confident of their own potentially more up-to-date knowledge and expertise, by way of knowledge of prescribing for example. A nursing perspective could have brought an added dimension to this study as acknowledged by the authors.

Research by Varpio et al (2014) could suggest that this dynamic hierarchy continues. Paediatric and palliative care settings in Canada were sites for their research. The authors argued that the two settings would account for any cultural tendencies which could affect inter- and intra-professional learning. It is not clear how or why the paediatric and the palliative care setting could fulfil this aim.

The teams, consisting of a faculty physician, resident doctor, nurse, pharmacist, social worker, were observed in practice, with specifically the resident doctor as the learner in this instance. The number of hours of observation were documented though the overall time-frame is not clear. The authors used data reduction to transform rich qualitative data into quantitative data, to identify similarities as well as differences. The rationale and application of this approach was described in detail. An interprofessional team (representative of the healthcare team within the study) analysed the data. It was

acknowledged that one of the research team was a member of staff at one of the settings but was not a participant of the study. However, it was not clear if this person was part of the analysis team, nor the influence this might have had on the participants.

For residents, almost 85% of the informal learning events were led by physicians, and the rest by nurses. As well as the more usual teaching techniques of giving advice, giving feedback, questioning and giving assurance, nurses' use of 'indirect manner' and mitigated speech, (as in 'You may like to ...') supported informal learning. Nurse to doctor interactions most commonly used this approach, possibly due to the impact of social identity and hierarchical effects on both parties. The authors appreciate that this may be an example of context, which may not be as common in other areas. Despite the limited prevalence of informal interprofessional learning reported in this study, the authors contend that it is worthy of recognition, and argue for the need to capitalise and encourage such opportunities.

The following three papers used more novel perspectives through which to analyse their findings, namely leadership, adaptive expertise and social network analysis (SNA).

Chatalalsingh and Reeves (2014), investigated the concept of leadership and its impact on team learning in the workplace via an ethnographic study. Data were collected via observations and interviews, over a nine-month period. The focus for this study was on the leaders of team learning within two multi-professional nephrology teams, with the theoretical framework provided by situational theory of leadership. Leaders were nominated as such by the clinicians within each wider team, either formally recognised as such by their role, or informally, by their actions (for example by supporting learning, or supportive relationships as interprofessional mentors, or as role models alongside their clinical input). Such leaders evidenced a commitment to share and learn across professional boundaries and roles.

Researchers found there to be a shared sense of responsibility for members of the MPT to care for each other, and value each other's professional perspective, as shown here - *'I cannot do my job without the expertise of these other very important team members'* (Chatalalsingh and Reeves, 2014 p. 516). Such attitudes were supportive of team learning (learning to learn together), giving staff a safe and secure learning environment, enabling questioning and requests for help, particularly when no specific individual has the solution or knowledge. The theoretical framework helped identify

perspectives of leadership styles - directing, coaching, supporting, delegating whilst working closely alongside colleagues, which enabled learning rather than controlling it.

The researchers concluded that as both teams were well-established and stable, this might limit applicability to other teams. In addition, since the focus for this study was on those in formal and informal leadership roles, then the perspectives of other team members may have added further to the study. Another feature of this context - evident from the wider detail though not explicitly commented on - was the apparent close working relationships within these teams. Clearly identifying factors such as this enable readers of research to self-assess such transferability and applicability.

A more specific emphasis came from a study from Mylopoulos and Farhat (2015), focused on adaptive expertise. The authors maintained that continued and purposeful improvement was a measure of expertise, and investigated how this may be enacted in the clinical workplace. The proponent was a paediatric surgeon seeking to improve minimally invasive techniques (hence demonstrating purposeful improvement) whilst acknowledging and identifying the need for the wider multiprofessional team to be part of this learning drive. The study design followed cognitive ethnography, with data captured from observations at meetings, during surgery and via interviews, and identified how improvements were distributed socially, (between the MPT, patients and families), materially (with the use of equipment, identifying optimum patient positioning, and the procedure itself), and developed over time. This theoretical approach encompassed the wider issues of a change or improvement to practice, recognising that learning this new technique was not just confined to the surgeon, but to the team. Active involvement in this workplace learning was necessary for all who were involved. Although learning in this context is more formal than previous examples, the study was included in the review since findings highlight the benefits of informal problem-solving and team learning within the clinical workplace – a requirement of successful implementation of this change in practice.

Rather than a group setting, determining the individual interconnectedness of informal learning was the focus of a quantitative study by Wagter et al (2012), investigating informal interprofessional learning in the critical care environment. Social Network Analysis was used to identify connections related to learning relationships between the MPT. Data were obtained from questionnaires sent to staff, working in both intensive and high dependency care. This was not one Unit, and so not all staff had

the opportunity to work closely together, which had an impact on the strength of their ties. A notable finding was that senior medical staff tended not to make these 'learning networks' with nursing staff, whereas the reverse was true. A qualitative enquiry, using for example semi-structured interviews would give the opportunity to explore this potential difference in more detail, thus adding depth to what is known of these relationships.

Summary of theme: Learning within the multiprofessional team

The coming together of professionals and their contributions to care and patient management are authentic examples of the ways in which clinicians work together. These findings exemplify how this may also result in continued learning as experienced by clinicians, providing illuminating insights and evidencing the complexity (and often variability) of clinical teams and the clinical environment (Wagter et al, 2012). Learning is benefitted by the sheer volume of patient encounters found in practice, and the reality of the context (Pearson and Lucas, 2011, and Alcantara et al (2013).

Learning within the MPT could be interdependent, unpredictable, unconscious, implicit and intuitive (Bunniss and Kelly, 2008) and arising from discussing, reflection, and by listening and observing (Pype et al 2014). Working and learning were almost inextricably linked in these studies, arising from the MPT handover (Fernando et al, 2013), MPT meetings (Alcantara et al, 2014 and Nisbet et al, 2015), and the MPT ward round (Paradis et al, 2016) and additionally enhanced by engagement and opportunities, supported by personal relationships (Pearson and Lucas, 2011). The levels of relative experience and seniority were found to be influential in learning specifically amongst nurses and doctors (Burford et al, 2013, Varpio et al 2014 and Wagter et al, 2014) though there was also an appreciation for the skills and knowledge that each individual or profession could bring (Bunniss and Kelly, 2008, and Chatalalsingh and Reeves, 2014), although not always explicitly stated or understood (Nisbet et al, 2015).

Shared learning arose from the situations, challenges and problem-solving inherent within the clinical workplace (Bunniss and Kelly, 2013), with improvements to practice and consequent learning distributed socially, materially, and over time (Mylopoulos and Farhat, 2015). This informal learning was valued over formal learning, as it was of more relevance to their work (Bunniss and Kelly, 2008), and motivated by patient need not external influences.

2.4 Learning opportunities arising from clinical practice

Opportunities for learning also arise from interactions with patients, and within the actions of clinical practice itself. The following section identifies such findings, most of which are from papers yet to be critiqued in this review, though some are additional findings from previously critiqued papers.

2.4.1 Learning from patients

Aside from intra- and inter-professional workplace learning are the everyday clinical workplace activities which centre on the management and care of patients. This theme identifies how clinicians experience learning which arises amidst and subsequent to specific interventions with patients.

Petterson et al (2015) interviewed 11 physiotherapists working in Sweden, to explore their experiences of their own professional development. This was a narrative enquiry, using the thematic framework of non-formal learning. Physiotherapists with more than 10 years' experience were invited to take part via their professional body, and a purposeful sample was chosen to represent different contexts (primary and secondary care, rehabilitation and private practice) across the country. Actual participants had between 19 and 30 years of experience. The interviews were non-structured, with participants encouraged to talk of their work histories, with occasional questions required for clarification purposes.

Three of the four themes were either wholly or closely related to learning from patients. Learning was stimulated by facing challenges, by way of the complexity of the needs of presenting patients. Situations were deliberately sought to extend their knowledge and experience, as a way of making their job more interesting, or occurred through changes or decisions outside of their control. Learning might have been uncomfortable at the time, as demonstrated here *'What do I do now with the patient? She's got to improve! They have to improve, and they don't! What do I do?'* (Petterson et al, 2015 p.399). Although challenging at the time, subsequently these situations gave physiotherapists the resources to master their work, and led to changes in attitudes and behaviours, with physiotherapists finding their work more meaningful as a result.

Participants also identified that the increasing range of their experiences enabled them to compare and contrast the familiar with the less familiar, and appreciate how their input collaborated with other health professionals. More dependent patients could be a source of learning as explained here – *'It's different when you work with very ill*

patients I think ... it's a huge responsibility, it's because they are so sick, so vulnerable. Somehow, this gives you confidence ... when you know you can handle that' (Pettersson et al, 2015 p.400).

Also relevant was that actual numbers of patients were supportive of learning, with Pettersson et al (2015) referring to these as 'hundreds of educators'. This increased the range of their experiences and strategic options. Respondents in the study learned by listening to the patients and their experiences, and making sense of the situations, which added depth of understanding. In addition, these participants learned from the occasions when interventions were unsuccessful.

Actual numbers of patients engaged with was also noteworthy in previously cited papers included this review. Nurses within the study from Huggins (2004), and participants in the study from Pearson and Lucas (2011) identified that learning was promoted and enhanced from the repetitive element arising from patient throughput. Radiologists in the study from Alcantara et al (2014) specifically reported that *'The problem is that the textbooks don't encapsulate that ... You need hundreds of examples to get that kind of database'* (Alcantara et al, 2014 p.621). And within the context of the Emergency Room, patient volume was identified as challenging but nevertheless provided opportunity – *'You have no choice but to learn when patients are piling up on you'* Goldman et al, 2009 p.564.

In a paper resulting from her Doctoral thesis, Vaughan (2016) used GPs' written accounts of powerful learning experiences to investigate WPL. The GPs practised in New Zealand and were invited to take part in this research whilst attending a conference. There were 57 participants, though the number invited to take part was not indicated. Data were anonymous, so aside from their role nothing more is known of the participants. She undertook a thematic analysis of what she described as 'vocational thresholds'. Most responses (n=48) identified the development of dispositional attributes required for their professional practice – thus in effect the learning outcomes. These may have come about from informal discussions and patient interactions, for example *'[a paediatrician] came on call with me as I was concerned. Watching his exam and planning with the family was powerful learning for me'* (Vaughan, 2016 p.102). An additional source of learning came from more purposeful situations such as the analysis of videoed consultations.

A smaller number (n=9) wrote of developing clinical skills and clinical knowledge as their significant events. This was given little prominence within the discussion of findings, though presumably this was of significance to the participants. The study identified the importance of relationships and direct patient experiences in learning to 'become' a professional. These powerful experiences were less a step-wise progression, but more akin to transformational change in the ways they contributed to ongoing and largely informal learning processes. Vaughan (2016) writes of this as learning 'ways of being' (in this instance) a GP. She identified that a key limitation of the study design was the lack of opportunity to further probe and explore their learning experiences in greater depth via interviews. However, this could be argued as giving participants the freedom to be open, and not subject to judgment.

Previously cited studies likewise identify other ways in which patients directly and positively influence workplace learning. Sargeant et al (2006) found patients to be both a stimulus and a source of learning. Within this study, the longer-term involvement of family physicians with their patients was specifically beneficial – from presentation, and diagnosis, through to treatment. Also, the opportunity to refer to previous patients was both a learning resource and a reminder. If a patient with a more unusual problem presented, then this could also promote learning, or encourage the GP to revisit and revise previous knowledge and understanding. GPs and trainees in the study from Pearson and Lucas (2011) also found potential opportunities for learning included exposure to particularly challenging problems or patients with several co-morbidities. Meeting patients presenting with a problem for the first time, without having previously been assessed, was a specific source of learning, and in contrast to more 'textbook cases' - a term noted earlier by Alcantara et al (2014) - presented as learning opportunities in secondary care. The primary care setting also gave additional insights to health conditions from the perspectives of the patients themselves. Pype et al (2014) reported that both the GPs and the nurses in their study cited the patients and their families as the most frequent sources of learning, related to physical and psycho-social issues, whereby the clinicians gained a greater understanding of communicating with patients to understand their fears.

Doctors in a study reported by Watling et al (2012) considered that their clinical work experiences were of fundamental importance to their ongoing learning, and were able to provide powerful examples of learning which were remembered some years

later. If experiences engendered a strong emotional response, this deepened learning and reflections. By way of example, this occurred 'in the debriefing of difficult experiences', particularly when there was uncertainty (Watling et al, 2012 p.194). Findings identified the importance and impact of learning cues, such as clinical outcomes and feedback from patients or families. These cues were judged as more credible than that of feedback from a supervisor, which participants considered a more subjective cue.

Summary of the theme: Learning from patients

Findings highlight tangible, physical involvement with patients stimulated learning (Sergeant et al, 2006), enabling clinicians to learn by listening and making sense of their situations, increasing depth of understanding (Alcantara et al, 2014), also concerning physical and psycho-social issues (Pype et al, 2014) and fundamental in learning how to 'become' a professional (Vaughan, 2016). Patients provide challenges, both planned and serendipitous (Pettersen et al, 2015; Pearson and Lucas, 2011), with throughput and actual numbers of patients identified as beneficial to learning (Huggins, 2004; Goldman et al, 2009; Pearson and Lucas, 2011; Pettersen et al, 2015) as well as the potential opportunities afforded by patients who did not present as 'textbook cases' (Pearson and Lucas, 2011; Alcantara et al, 2014). Experiencing and managing over time a wide range of situations, also brought about a confidence in practice (Pettersen et al, 2015). Though less commonly owned, learning also occurred when interventions were unsuccessful (Alcantara et al, 2014).

There is an authenticity and immediacy to such learning, with significant incidents providing strong aides memoires to support learning due to the emotional impact (Watling et al, 2012). Patient outcomes and interactions with families are a source of feedback, valued by clinicians across the multiprofessional team – and in some cases more valued than that from supervisors (Watling et al, 2012), which again supports learning.

2.4.2 Learning from clinical work

Specific aspects of practice (inter and intraprofessional working relationships, and the patients themselves) have been previously reviewed and evaluated, but there are other features of clinical work that are similarly recognised by participants as supportive of learning. These include the practicalities of care and its management, and

the need to respond to the uncertainty and complexity often found in the clinical environment.

Goldman et al (2009) found that taking part in clinical practice – the day to day activities - enabled the participants to gain an understanding of their role and provided opportunities to observe and speak to other staff. Focused learning occurred due to very specific situations, either opportunistic when learning clinical skills for example, or from asking questions. Repetition, or repetitive cycles, gave opportunities to practice and refine skills and knowledge, through critical reflection – *'In your mind you're replaying ... is there something I could have done, or seen?'* (Goldman et al, 2009 p.565). Finally, intense experiences, such as difficult situations, focused teaching, experiencing something for the first time and when errors are made, heightened emotions and provided for memorable learning. This study demonstrates the opportunities inherent amidst everyday practice – *'the worker is always learning'* (Goldman et al, 2009 p.568).

Cuyvers et al (2016) found that newly qualified consultants in their study identified specific experiences representative of learning processes which facilitated ad hoc WPL – critical incidents, uncertainty or possible lack of competence - and in situations where instant solutions were absent. And in addition to a greater understanding of team workings, Alcantara et al (2014) found MPT meetings gave radiologists opportunities to reflect on their image interpretation and decisions, which improved their pattern recognition.

Petterson (2015) reported that challenges within the clinical practice of physiotherapists, either occurring naturally, or sought for professional development, led to learning. This was related to changes in attitudes or behaviours, or ways of managing more complex care. Colleagues were sources of support in this process, therefore it was important to be willing to ask for advice.

Similar findings regarding motivational factors were also apparent in an investigation of both postgraduate and experienced physicians, as reported by van de Wiel et al (2011). This study exemplifies the challenge of researching complex concepts such as deliberate practice and self-regulated learning within the clinical setting. Data were obtained from interviews, with the questions being derived from deliberate practice and self-regulated learning theory. The motivation for engaging in learning activities to nurture and maintain competence was largely due to a desire to provide good care to patients, rather than through identifying personal developments and

improvements. Problem-solving also drove learning, and this was supported by reviewing the literature and asking for advice. Learning occurred in response to everyday work. Since this did not follow the defined concept of deliberate practice, whereby activities to support learning should be explicitly and actively engaged with, the authors seemed disappointed in this result. However, they suggested that observational research and the use of work diaries could add further to the investigation of this concept.

Summary from theme: Learning from clinical work

Examples within this theme again demonstrate that awareness of learning opportunities are ever-present for some clinicians. Participants in the study from Goldman et al (2009) identified opportunities to repeat and refine their clinical skills, and critically reflect on their practice, with emotional intensity providing an added memorable stimulus to learning. Critical reflection was also a feature of the learning identified by the radiologists in the study from Alcantara et al (2014). Difficult circumstances such as problem complexity (Pettersen, 2015) critical incidents, uncertainty or problems with no immediate solution were also opportunities to learn (Cuyvers et al, 2016). Of interest, due to the differing stance of the researchers and the responses of the participants, was the study from van de Wiel et al (2011). The participants evidenced learning that was reactive to clinical/patient need, as opposed to a more deliberative, proactive approach.

2.5 Physical and social structures influencing workplace learning

Papers within the review identified how the physicality of the workplace – clinical areas, ward offices, informal meeting places – can impact on workplace learning opportunities. There were in addition, social and cultural elements which influenced the clinical learning environment.

2.5.1 The physical workplace

The findings within this section demonstrate the impact of the physical elements of the workplace. The value of ad hoc workplace learning, and the impact of workspace, is exemplified in ethnographical research undertaken by Waring and Bishop (2010). Members of the MPT belonging to two surgical Day Case Units in the UK were observed in three locations – the staff lounge, the theatre corridor and the store-room. Their

investigation identified the impromptu conversations amongst MPTs, as what they termed 'water-cooler learning'. Ad hoc engagement not only supported the sharing of knowledge and information of benefit to patient care and safety, but was most valuable for critical reflection on experiential learning, and reinforcing professional behaviours, identities and social 'norms'. In addition, participants identified these conversations were also an opportunity for problem-solving, and a source of emotional support, to 'let off steam'. Such informal conversations occurred inter- and intra-professionally.

As reported by Bunniss and Kelly (2008) the physical workspaces, and opportunities for the collective of general practitioners and the pharmacy were a potential reason for the differences in approaches and attitudes to collective workplace learning, with the GPs less likely to report whole-team learning. The impact of 'space' on opportunities for learning within and across disciplines was likewise prevalent in their later study, (Bunniss and Kelly, 2013). Their chosen setting had open-plan wards, which gave high visibility to practice.

Gregory, Hopwood and Boud (2014) undertook a qualitative study, gaining data from observations, informal discussions and interviews. The study was situated in an acute setting in Australia, investigating the role of spaces in workplace learning, using spatial theory as a theoretical framework. They argued for this being an under-reported influence on learning. Data were obtained from nine nurses, 2-5 years post-qualification, using observations from shadowing participants, and semi-structured interviews. Sources of learning for this study were ward rounds, the medical workroom and the registrar's room. These 'perceived, conceived and lived spaces' were influential to learning, in that the physical spaces affected how staff negotiated, interacted and integrated, and learnt from each other.

A physical barrier to learning, from a nursing perspective, was reported by the authors. Registrars were based in a specific office, which limited interaction, due to the nurses' reluctance to disturb these doctors. In addition, the registrars acted as physical gate-keepers to this space by speaking at the door. An alternative space for doctors, the medical room, was a more open space, with the example given of a nurse entering and informally teaching one of the doctors how to find a protocol and act on it. These findings were presented to demonstrate the potential impact of power relations on learning, and also the benefits of more informal spaces. Since only nurses were

interviewed, it is unclear as to the feelings and explicit experiences of the medical staff in this setting, who may feel justified in their use of these spaces.

The physical work area is also relevant to opportunities to learn. Research investigating the experiences of hospital pharmacists in NW England was undertaken by Noble and Hassell (2008). This was an interesting study, in that there were few that related specifically to the wider multiprofessional healthcare team. Semi-structured interviews were gained data from twelve hospital pharmacists. Their barriers to workplace learning included the fact that they worked in isolation, and that work pressures and workplace rotations also negatively impinged on their learning. They felt that they lacked feedback on their practices, and that they worked in an environment that failed to promote informal learning. This chimed with findings from Alcantara et al (2014) who also found that radiologists' feelings of workplace isolation limited opportunities to learn from colleagues, though this was somewhat overcome by greater involvement in the MPT meetings.

Summary of theme: the physical workspace

Informal workplace learning is greatly dependent on informal opportunities. The physicality of the clinical area and the proximity of others within the wider clinical team affected opportunities for interaction, and thus opportunities for learning by way of inter- and intra-professional discourses and gaining of feedback (Bunniss and Kelly, 2008; Noble and Hassell, 2008; Waring and Bishop, 2010; Bunniss and Kelly; 2013). Interestingly, it was not only the physical spaces, but how they were employed. Some barriers were clearly physical, but others were influenced by the prevailing culture (Gregory, Hopwood and Boud, 2014). Open work areas greatly increased the opportunities to observe others, identify suitable role-models and reinforce professional identities, and not least provide emotional support and a safety valve via what could be construed as informal de-briefing (Waring and Bishop, 2010).

2.5.2 The clinical learning environment

The culture of each context can be influential to learning and is engendered in part by those who work together on a regular basis. Findings reported by Pearson and Lucas (2011) identified the effect of engagement on learning, which was encouraged by the respect shown to learners, and recognition of the individual as a team member - a culture of respectfulness which was role-modelled across the team and appreciated by

learners. These actions positively influenced the quality of the learning opportunities, such that educators understood and made explicit what was required, and in addition responded to the learners as individuals, and on an emotional level. Such learning, intra- and inter-professional, was not limited to trainees but highly valued by staff of all levels, supported by their everyday interactions with patients, team meetings and using informal discussions. Such activities were sources of 'support, stimulation and shared ideas' (Pearson and Lucas, 2011 p.674).

How nurses perceived the critical care unit as a learning environment was the focus of a study conducted by Muldowney and McKee (2011), which in addition identified specific nurse-to-nurse learning and its contribution to this learning environment. The study used descriptive quantitative survey design via an established survey tool. The participants were 47 (out of a possible 65) qualified nurses new to this specialism, from five teaching hospitals in Eire. This was a creditable response rate of 72%. Positive effects impacting on the learning environment included the level of commitment of the nurse manager and the clinical educator to the support of learning, and a culture that encouraged a questioning approach and commitment from all staff to continued learning. Interpersonal relationships, whereby staff were approachable and able to answer questions also positively influenced learning experiences of these new staff. The authors did not identify any specific limitations to this study. Both were nurse educators, one in critical care, which might have indicated a potential relationship with participants, not explicitly acknowledged. Since data were obtained using a survey, then this risk is somewhat minimised. The survey method naturally limits wider exploration of individual experiences, which could have enhanced the findings.

Participant experiences as explored by Pimmer et al (2013) observed differences in work and learning cultures between departments. Some consultants would actively encourage engagement when referred to for advice, whereas others would assess patients independently and leave written notes, thus minimising opportunities for active and face-to-face engagement. Similarly, the team members in the study from Chatalalsingh and Reeves (2014) identified the positive effect on the clinical learning environment which resulted from mutually supportive working relationships, which engendered a safe environment in which to ask questions. Petterson et al (2015) also found that questions and critical discussions developed a culture which engenders

learning, whilst the issue of trust was also identified by Newton et al (2015) who asserted that a good rapport underpins trusting relationships.

Key individuals and their roles within a team can affect culture. The commitment of the nurse manager and clinical educator was found to influence the clinical learning environment, as found by both Muldowney and McKee (2011), and Govranos and Newton (2014). In addition, Bunniss and Kelly (2008) found that more egalitarian team structures tended to support learning opportunities, such that social barriers to asking questions inhibited learning. In their study, whereby the GP position was more hierarchical, the GP tended to influence learning from this position of authority, rather one in which all could identify the benefits of learning from each other.

Summary of theme: the clinical learning environment

Only a small number of studies referred specifically to the clinical learning environment within the findings and analysis, and only one of those reviewed had this - the clinical learning environment - as its theoretic lens (Muldowney and McKee, 2011). Again, examples of supportive inter-personal relationships had a positive bearing on learning opportunities (Pearson and Lucas, 2011; Chatalalsingh and Reeves, 2014; Newton, 2014) as did those in key management and educator positions who were influential in engendering a positive learning culture (Muldowney and McKee, 2011; Govranos and Newton, 2014), and colleagues who actively harnessed learning opportunities (Pimmer et al, 2013). Environments with a 'flatter' hierarchy (Bunniss and Kelly, 2008), a supportive questioning culture (Chatalalsingh and Reeves, 2014, and Petterson et al, 2015) and a trusting rapport (Newton et al, 2015) were also positively significant.

2.6 Factors influencing engagement with workplace learning

Engagement with WPL is an important characteristic of professional practice, which may arise from internal or external motivators. The following papers provide empirical evidence as to the ways in which the drive to learn may be encouraged, and the learner motivated to learn.

2.6.1 Internal motivation

Huggins (2004) reported that for nurses in their study, internal motivators, such as their interest in the work and their desire to develop, positively influenced learning. And similar to the study of GPs by Vaughan (2016), Cuyvers et al (2016) found there was

recognition of learning to 'be' a professional in this role, and that WPL is a means to gain such an attribute. Watling et al (2012) found clinicians indicated a wish to 'measure up' to professional standards motivated learning, as did personal values and attitudes, whereas Huggins (2004) found nurses were motivated to learn in order to deliver a high standard of care. Bunniss and Kelly (2013) found participants in the MPT to be motivated by feeling valued and having a sense of belonging.

Pimmer et al (2013) argued that, in general, doctors were deemed to be well-motivated towards learning, though residents showed greater motivation and engagement if the situation was more relevant to their chosen specialism. In addition, the level of interest of the learner had a direct influence on the enthusiasm of the teacher.

Job satisfaction and enjoyment were also motivators, as found by Acharya et al (2014), and Huggins (2004), where nurses cited interest in work, self-development, and 'wanting to be good at my job' as reasons to engage in learning. Other specific internal characteristics which motivated learning included reflection, self-awareness, self-direction, monitoring of learning needs, curiosity, and having the actual skills to harness opportunistic learning (Sargeant et al, 2006), including a willingness to ask questions, active involvement, and a desire for self-fulfilment (Tabari-Khomeiran, 2007). Pearson and Lucas (2011) specifically identified emotion as a trigger for learning due to challenging situations.

2.6.2 External motivators

Some motivators were external to the individual. A study from Tabari-Khomeiran et al (2007), found the competence development of nurses to be largely driven by the needs of patients and relatives, although some participants also identified intrinsic motivators. Whilst 'Competence Development' rather than deliberate practice was the term used in the research, the title of the study contains the phrase 'the process of constant interaction'. The two cannot be conflated but they do share some similarities, in that both require active engagement. Nurses in this study recognised opportunities to develop their skills, through the challenges of accountability and workplace need. As their practice developed, so did their ability to self-evaluate. The continued learning of nurses included the input of others, including doctors, by means of practical support, and as a result of the stories shared by more experienced nurses, for example occurring

during the nursing handover. This was a small-scale study, but of particular relevance due to its taking place in an intensive care unit.

Alcantara et al (2014) found radiologists motivated to attend MPT meetings due to the positive effect of these interactions, and opportunity for experiential learning, with radiologists' confidence increased following timely feedback which supported their continued learning. Nurses were motivated to learn to better support colleagues, to be effective team members, and to pass on knowledge and skills (Huggins, 2004), and GP trainees were motivated by the enthusiasm and input of educators (Pearson and Lucas, 2011).

Summary of themes: internal and external motivators

Internal motivators could be summarised as the desire to be a good and effective professional (Huggins, 2004; Watling et al, 2012; Vaughan, 2016; Cuyvers et al, 2016), as a result of a high level of job satisfaction (Huggins, 2004; Acharya et al, 2014), and especially when the work was relevant to trainees' chosen specialism (Pimmer et al, 2013). Personal attributes were found to be influential (Sargeant et al, 2006; Tabari-Khomeiran et al, 2007), including curiosity, and notions of the 'self' - self-awareness, self-direction and the desire for self-fulfilment. A sense of belonging and feeling valued within the MPT were also markers of internal motivation, with the emotional element of practice also a positive factor in challenging situations (Pearson and Lucas, 2011).

External motivators centred on being part of a team, and the wish to pass on professional knowledge (Huggins, 2004) and to meet patient needs (Tabari-Khomeiran et al, 2007). The enthusiasm of the teacher positively influenced motivation (Pearson and Lucas, 2011), as did working in their chosen specialty (Pimmer, 2013), and the opportunities and outcomes team meetings afforded (Alcantara et al, 2014). Aside from the study from Tabari-Khomeiran et al (2007) the internal and external motivators of learning were generally identified and discussed within these papers as by-products of the study, rather than the key focus. Given the importance of continuing professional development, it is rather surprising that the concept of motivation is not a common feature of this body of evidence.

2.6.3 Barriers to learning

Although most evidence within these papers identified the many ways in which informal learning occurs in clinical practice, there were some which identified barriers to learning, either as a significant focus, or a subsidiary area of investigation.

Specific barriers to learning and possible ways in which they may be overcome were the key focus of studies by Lloyd et al (2014) and Skipper et al (2016), with additional relevant findings from previously reported papers also included here. The research undertaken by Lloyd et al (2014) was sited in New South Wales, and investigated the experiences of Allied Health Professionals, representing 10 professions, and included managers, clinicians and educators. The authors recognised that Continuing Professional Development (CPD) activities were more commonly thought of as those occurring outside of the workplace – such as study days and conferences. However, the study was designed to explore workplace experiences as a means of supporting CPD. Such examples were often unstructured and unplanned, also incidental, and at times unrecognised by practitioners. Data were collected from a purposive sample representing a wide range of professions using semi-structured interviews and focus groups. The more experienced staff recognised the breadth of opportunities afforded by the workplace, with one commenting that *'... essentially it's learning that takes place at work and through one's work ... So, it's actually seeing the workplace as the classroom'* (Lloyd et al, 2014 p.4).

Less experienced staff tended to think of CPD in more formal terms, whilst key means to informal learning were exemplified by reflective conversations between staff, and also patients. Enablers and barriers to workplace learning included opportunities (or otherwise) to access and be with colleagues. These may be within their own professional groups as well as those from other disciplines, particularly those with certain expertise and time for discussion, and the extent to which staff in general were supportive of learning. A key motivating factor was positive attitudes of colleagues in general, above those of professional CPD requirements and patient characteristics.

Identifying possible supports and constraints to workplace learning, Skipper et al (2016) used a case study approach, set in 3 paediatric units in Denmark. This was primarily focused on the post-graduate learning of junior doctors. Data were collected from field notes and interviews, and participants included consultants and junior doctors. Three outcomes were identified; the extent to which care of patients and the

apprenticeship of learning to be a doctor where interconnected, and adversely affected by each other; the learning context and the daily routine of clinical practice; organisational practices and culture. All could support as well as inhibit the learning opportunities in the clinical setting.

Barriers to learning may also occur due to the competing needs of different learners in the clinical workplace, with Bunniss and Kelly (2013) suggesting that professional hierarchies could adversely affect interprofessional learning opportunities. For example, Acharya et al (2014) found that junior doctors in a delivery suite felt that midwives prioritised the learning of student midwives over that of the specialist doctors in training. Similarly, Burford et al (2013) noted that junior doctors felt student nurses' learning needs to be prioritised over their own, by the more senior nurses. In a similar vein, Govranos and Newton (2014) identified that culture and work practices could impinge on opportunities and constrain espoused values of learning. For example, junior nurses needed to be involved in the care of more dependent patients to learn and develop – not to do so was a missed opportunity. Finally, the setting or context may be inhibitory - some participants in the study undertaken by Fernando et al (2013) recognised reluctance to ask questions or identify learning needs when in a large MPT handover.

Papers also identified the impact of time as a barrier to learning. Newton et al (2015) found nurses valued the teaching and support of more experienced staff when learning new skills or applying knowledge. However, when clinical areas were busy, observers noted that there was little time for planning and interactions, with potential learning thus disrupted by workload. Time pressures again were again identified as a barrier for nurses in this study – *'time is our biggest enemy'* (Govranos and Newton, 2014 p.657). Likewise, Alcantara et al (2014) reported that time and availability to attend MPT meetings were barriers to learning for the radiologists in this study. Specific times may be more problematic, with Pimmer et al (2013) finding lack of time to be particularly constraining at nights and weekends.

However, participants in the paper reported by Acharya et al (2014) perceived time issues not to be a constraint within the context of trainee centred ward rounds. Learning opportunities were identified and discussed prior to the round, and whilst there were initial concerns over time constraints, once implemented, trainees and consultants reported them to be largely unfounded.

Summary of theme: barriers to workplace learning

Barriers to WPL were related to time factors as well as practical and physical opportunities. Learning was adversely affected if there was a disconnect between service provision or organisational culture and learning (Skipper et al, 2016), and if learning opportunities were adversely affected by competing learning needs amongst clinicians (Bunniss and Kelly, 2013; Burford et al, 2013; Acharya et al, 2014; Govranos and Newton, 2014), or a reluctance to show a degree of ignorance in a public arena (Fernando et al, 2013). Time constraints were also acknowledged (Pimmer et al, 2013, and Govranos and Newton, 2014), although largely unfounded by Alcantara et al (2014). Overcoming these constraints were often the result of professional attributes – either found within the learner or their colleagues – or specifically, by actively conceptualising the workplace as a learning environment (Lloyd et al, 2014).

2.7 Outcomes of learning in the clinical workplace

Outcomes from learning activities in the clinical workplace were infrequently identified and were largely self-reported. Since episodes of informal WPL are often difficult to recognise, then, in a similar vein, informal learning outcomes may be just as elusive. Learning outcomes in the cognitive and psychomotor domains (Bloom et al, 1956) were more commonly reported, with the nurses in the study reported by Huggins (2004) identified improved care for patients, by way of increased knowledge, skills and competence. Although difficult to measure objectively, their subjective self-assessment was based on feedback from colleagues, and comments from patients and relatives. Nurses in the study by Tabari-Khomeiran et al (2007) were aided in the application of theory to practice by way of vignettes told by the more experienced staff. In a similar vein, practical problem-solving skills were identified as learning outcomes from research undertaken by Waring and Bishop (2010), Bunniss and Kelly (2013) and Gregory et al (2014). Gaining increased depth of understanding and learning how to prevent errors was reported by Pimmer et al (2012); improvements in clinical decision-making was noted by Marshall et al (2013), and procedural and cultural knowledge, specific to the context, as well as the learning and reinforcing of hard knowledge was described by Pimmer et al (2013). For more experienced clinicians, Wenrich et al (2011) found that deconstructing previous knowledge prior to teaching, provided learning opportunities to either reinforce or reassess personal understanding and improve clinical skills.

Participants in research by Pye (2014) developed increased understanding of psychosocial and physical matters, and Nisbet et al (2015) reported greater understanding resultant from discussing research papers in team meetings.

Some reported outcomes were associated with learning in the affective domain, relating to values and attitudes (Krathwohl et al, 1964), and included learning who to trust and approach for advice and support (Marshall et al, 2013), learning to discriminate between who to employ as role-models, and learning judgement skills (Watling et al, 2012), whilst participants in the study from Alcantara et al (2014) gained confidence. Professional skills, such as learning to work together in the MPT, and understanding team dynamics, were reported by Burford et al (2013), Bunniss and Kelly (2008 & 2013), Chatalalsingh and Reeves (2014), and Gregory et al (2014). How to 'be' a professional, or developing a professional identity was an outcome reported by Burford et al (2013), Varpio et al (2014), Vaughan (2016) and Cuyvers (2016). Other outcomes related to learning how to learn, (Watling et al, 2012), and learning to utilise feedback, (Acharya, 2014).

Summary of the critical interpretative literature review

The characteristics of the studies within this literature review are identified in Table 2.5. Year of publication demonstrates the increasing interest and data published within this field. Most studies were centred in secondary care, with participants representative of the multiprofessional team, although those outside of medicine and nursing were less-well represented. Ethnography and observational study design were most commonly found, with socio-cultural theory most often used as a theoretical framework.

The methodology of this review has generated findings which have been thematically analysed, and has identified the many ways in which post-graduate clinicians continue to learn within the workplace. They learn from each other intra- and inter-professionally, much of which arises from their day-to-day work practices. Patients not only provide opportunities for learning, but are also motivators for learning. The clinicians within these studies also identify personal professional drivers. They may utilise learning attributes, and in addition continue to learn how to learn. There are physical and social elements which affect learning – the physical workplace, and interactions (formal and informal) between clinicians - which also impact on

opportunities for learning. Outcomes of learning are less frequently described, with knowledge and its application, and clinical skills more commonly mentioned than learning within the affective domain.

Each study builds on and extends our understanding of this phenomenon, as experienced by clinicians at different stages of their career, and within different contexts. Studies which investigate the MPT in their authentic setting are particularly useful for our understanding of WPL over the longer term. What is less understood is how this learning is experienced over the course of a career which is likely to extend over decades, and de facto by clinical experts. In addition, individual perspectives are often subsumed into the summary findings of clinical workplace learning studies. What would extend our understanding of this phenomenon would be to explore the *individual* experiences of clinicians, across a multiprofessional team, working at the highest levels of expertise.

Characteristics No. (% rounded up to the nearest %)
Location
UK 9 (26)
Europe 8 (24)
Australia & New Zealand 8 (24)
Canada & United States 8 (24)
Other 1 (3)
Publication, year
2000-2005 2 (6)
2006-2010 5 (15)
2011-2015 25 (74)
2016-2018 2 (6)
Setting
Secondary care 28 (32)
Primary care 5 (15)
Learners
Doctors 12 (35) – of which Consultants & GPs 5 (15) Specialist Trainees 2 (6) Both 5 (15)
Nurses 7 (21)
MPT 12 (35)
Pharmacists or physiotherapists 2 (6)
Study design
Ethnography/observational studies in total 13 (38), of which with Semi-structured Interviews 3 or Interviews 5 with Semi-structured Interviews and Focus Groups 1
Survey 6 (18)
Case study 4 (12)
Grounded Theory 3 (9)
Phenomenography 2 (6)
Narrative enquiry 1 (3)
Semi-structured interviews 3 (9)
Semi-structured interviews & Focus Groups 1 (3)
Interviews 1 (3)
Conceptual/theoretical framework
Socio-cultural learning theory* 9 (26)
(Informal) Workplace Learning 4 (12)
Other learning theories** 8 (12)
Clinical Learning Environment 2 (6)
Non-learning theory*** 4 (12)
Other**** 5 (15)
None 2 (6)

Table 2.5: Characteristics of the 34 workplace learning studies within the Literature Review

*Socio-cultural learning (2); Legitimate Professional Practice (1); Activity Theory (1); Situated cognition and cognitive apprenticeship (2); Collective or collaborative learning (2).

**Experiential learning (2); Adult learning (1); Lifelong learning (1); Transformative learning (1); Distributed Cognition (1); Deliberate practice and Self-regulated learning (1); Informal Interprofessional learning (1).

*** Leadership theory (1); Chaos Theory (1); Spatial Theory (1); Social Network Analysis (1).

****Professional socialisation (1); Trust and credibility (1); Interprofessional realities (1); Competence development (1); Teaching as learning (1).

Chapter 3: Core concepts, learning theory and a conceptual framework

This chapter provides a critical analysis of relevant concepts and learning theories which have informed the study design. The individual concepts of '*professional practice*', '*expert practice and expertise*', and '*informal workplace learning*' have been informed by the overarching concept of the curriculum. Grant (2018) writes that a curriculum may be thought of as an 'ideological, social and aspirational statement [reflecting] local circumstances and needs.' (Grant, 2018 p.71). The use of the word 'statement' implies that such a curriculum is explicit in nature. The challenge for a more informal situation is the potential lack of such clarity. Thornton Moore (2004) has argued that the term curriculum can be used for workplace learning, even in situations where this is not the primary intention of an interaction – a naturally occurring curriculum of experience, not static, but dynamic. The large-scale study of 60 sites which contributed to these understandings found such a curriculum to be shaped by the internal features of the organisation, the personal characteristics of the personnel, and by the external environment.

In an attempt to encourage explicit thought and reasoning regarding curriculum theory, Dillon (2009) sought to unpick its particular facets. These include how it is defined (for example, formal, informal, hidden, situated), the elements which contribute to the curriculum, (teacher; learner; subject; milieu), and the resultant changes in practice (how to think, how to act, and the actions to be taken). Thus, a curriculum contains structure, content and process, and can be a powerful learning tool. Whilst the learning relevant to this study has been defined as 'informal' I would argue that such learning may still be predisposed to the influence of more formal frameworks such as that of a curriculum. However, it is clear that the concept of a curriculum per se is in itself a contested one, as evidenced by the many descriptors used in conjunction with this term. The structure, content and processes relevant to this particular clinical workplace are identified and critically evaluated within this chapter.

Like Thornton Moore, Billett (2006) argues that the workplace is potentially able to provide affordances or opportunities for learning, by way of its learning environment, that is the workplace activities support a curriculum for learning. Thus, the curriculum

may be thought of as not only a body of knowledge to be transmitted, as a product of learning achieved by learners, but also inclusive of skills and attitudes - curriculum as praxis.

Even within more formally regulated and explicit curricula there may be external or unintended influences on the content and the processes of learning. Hafferty (1998) identified that what is taught and what is learned during medical training is not captured within the intended, explicit and stated curriculum, identifying this as medicine's 'hidden curriculum'. Although he recognised that there may be some variations in how such a curriculum might be concept and defined, he summarised the interrelated elements as being the formal and endorsed curriculum; the somewhat ad hoc forms of personalised learning and teaching as the informal curriculum; and the influence of the organisation and its culture as the hidden curriculum.

Razack and Philibert (2019) make reference to Hafferty's notions of the formal, informal, and hidden curriculum, and the effects of these concepts on the clinical learning environment. However, they consider that negative facets may be overcome by promoting inclusive practices, a recognition of the diversity of the clinical community, and addressing issues of equity of opportunity. Again, although this paper is focussed on postgraduate medical education, the principles apply beyond this to other learning communities.

There is somewhat of a lack of recognition how the curriculum may be perceived or envisaged (however described) within the ongoing learning which takes place throughout a career beyond that of gaining formal qualifications or role. For the purposes of this study, and its contribution to the underpinning and relevant concepts, I have premised the argument of curriculum as being related to practice within the workplace - in this context, the clinical activities and professional practices (praxis) within the PICU (Thornton Moore, 2004; Billett, 2006). This is reflected in the concepts of '*professional practice*', that is the activity within the clinical workplace; '*expert practice and expertise*', that is the level of such practice; and '*informal workplace learning*', that is the processes of learning.

The findings from the interpretative literature review and the following critical analysis and evaluation of relevant concepts have been integrated to form the conceptual framework for this study.

3.1 Defining concepts relevant to this study.

This section provides a critical analysis of what is understood of the core concepts within the research question, namely '*professional practice*', '*expert practice and expertise*', and '*informal workplace learning*', utilising literature from diverse sources (academic and professional) to evidence the relevance and importance of these concepts to conceptual framework of this study. Section 3.1.1 *Professional practice* encompasses that which clinicians need to know and do, and the professional attitudes and values they hold. Since this study explores experiences of workplace learning, then this represents in its broadest sense 'what is learnt'. Section 3.1.2 *Expert practice and expertise* critically appraises the features and attributes of this level of practice. Since *professional practice* explores 'what is learnt' then this section critiques the depth and breadth of such learning and its application. The concept of *informal workplace learning* is not limited to the clinical context, and section 3.1.3 critically appraises how it is construed and understood, including potential influences on such learning. Language and terminology can differ between disciplines and individuals, especially when the words used have everyday connotations, therefore, how such terms are used within this study promoted greater consensus and understanding.

Empirical data is utilised in this critique, and in addition, academics and practitioners share formal discourse by way of their published literature, which includes not only empirical study findings but also the synthesis of findings, (both theirs and others), and academic enquiry by way of conceptual papers. The quality of these papers can to some extent be reflected within the peer review process, and clarity as to the purpose of the paper (Cronin, Ryan and Coughlan, 2007). Indeed, Thorne (2017) suggests that including purely empirical studies in a review risks avoiding conceptual papers, or those which have synthesised the findings of authors in the field. Greenhalgh, Thorne and Malterud (2018) argue for the place within academic discussion and debate of narrative reviews by experts, and their complementary place within reviews of evidence.

The authors making such contributions to this critical analysis are frequently cited, and well-respected in the field of professional and workplace learning, though this naturally does not preclude critical appraisal. Billett in particular reflects on and critically analyses the context of his early working occupation demonstrating the ways in which this has influenced the direction of his subsequent academic career (Billett, 2005; 2009;

2010; 2011; 2015 and 2016). He has harnessed theory and research to identify and present the key issues thus appealing to, and engaging, both academics and practitioners. I propose that such conceptual or narrative review papers are similar to the notion of 'water-cooler learning' identified in a paper within the literature review (Waring and Bishop, 2010), whereby such published literature contributes to a forum to pose questions, share findings and discuss ideas, as well as identify areas of interest and future research. This is especially important if papers are published cross-discipline, such as in this case clinical education, medical education, workplace learning and learning theory, thus enhancing cross-fertilisation, as exemplified by Billett previously, and also Eraut, (1994; 2000 and 2004), Fenwick (2008) and Engeström (2004; 2010 and 2011).

Since Dreyfus and Dreyfus (1986) assert that experts discriminate from the many specific cases they hold within their experience then I contend that a culture or community benefits in a similar way, no less so for being physically apart. Such communities are related by their discipline or specialism, and influenced and connected by their shared academic reading, reviews and robust discussion – sections 3.1.1 – 3.1.3 critically appraise these concepts.

3.1.1 Concept of 'professional practice'

Each professional body within the NHS - the General Medical Council (GMC), the Nursing and Midwifery Council (NMC), the General Pharmaceutical Council (GPC) and those working under the auspices of the Health Care Professions Council (HCPC) have within their Codes of Conduct the knowledge, skills and attitudes required of such a clinician (GMC, 2013; NMC 2015; GPC 2017; HCPC 2016). Hilton and Southgate (2007) contend that professional practice is premised on the identification of a body of specialist knowledge and skills, an obligation to provide a high standard of practice, including moral and ethical standards, and delivered with a degree of self-regulation and self-autonomy. If professional practice can be said to include the identification of a knowledge base, recognised in both medical and nursing literature, then this apprises the formal professional curriculum (GMC, 2013; NMC 2015; GPC 2017; HCPC 2016), the knowledge and its application, and the professional behaviours expected of each member of the professional body.

Concepts of professional knowledge and practice have been debated from the time of Aristotle, as interpreted by Jonsson et al (2014). Specific forms of knowledge include episteme (scientific or factual knowledge, independent of context), techne

(knowledge used for construction, or context-specific ways of applying knowledge), which following a period of learning can be said to result in phronesis – professional or practical wisdom (Chiavaroli and Trumble, 2018).

Therefore, knowledge is not a singular concept. The philosopher Gilbert Ryle (Ryle, 1945) reasoned for the differences between ‘knowing that’ and ‘knowing how’ suggesting that one may not be adjudged in relation to the other, and that indeed the latter can often come before the former. In an effort to acknowledge and identify depth of learning and understanding, Bloom and fellow educational psychologist and educationalist colleagues met over a period of some years in the 1950s to determine levels of learning objectives. This culminated in his eponymous taxonomy of learning, (Bloom et al, 1956), which proposed that within the cognitive domain is a hierarchical structure, representative of increased depth and sophistication of understanding. There was some criticism of the attempt to separate cognitive from affective learning, which Bloom acknowledged, but this taxonomy was always considered by the authors as a work in progress (Anderson and Krathwohl, 2001). Krathwohl (2002) revised elements of this taxonomy, including the notion of metacognitive knowledge – largely unrecognised in Bloom’s era – which includes strategic knowledge, contextual and conditional knowledge, and self-knowledge, and is most relevant at the higher levels of practice. Knowledge needs to be gained, organised and integrated for it to be applied - ‘knowledge accretion [accumulation], validation and integration’ (Boshuizen, 2006, p.74).

Billett (2011) also refers to differentiated knowledge - conceptual knowledge (‘knowing that’), procedural knowledge (‘knowing how’) and the descriptor dispositional knowledge (‘knowing for’) relating to values and attitudes, including criticality. And specific to nursing, Carper (1978) identified four strands of knowledge, namely empirics (the science of nursing), aesthetics (the art of nursing), personal knowledge, and ethics (moral knowledge in nursing). She theorised these forms of knowledge to be richer and more applicable to nursing practice than recognition of purely empirical knowledge.

The psychomotor domain (skills development and dexterity) and the affective domain (relating to values and behaviours, and emotions) were included in Bloom’s original handbook (Bloom et al, 1956), but in lesser detail, and further developed some years later (Bloom et al, 1972). These three domains are referred to in the learning and assessment of nursing competence (NMC, 2015) and that of the allied health

professionals (HCPC, 2016) – knowledge (cognitive domain), skills (psychomotor domain) and attitudes (affective domain). However, in medicine (GMC, 2013), knowledge, skills and *performance* are the domains referred to, with attitudinal competence included within the realms of ‘communication, partnership and teamwork’ and ‘maintaining trust’. The notion of professional values illustrates what Cruess and Cruess (2008) refer to as the social contract doctors have with society. This is arguably of similar relevance to all members of the healthcare team, as can be seen in the Table 3.1 overleaf, which identifies the elements of this social contract within each of the relevant professional standards.

	Relationship with patient/client
GMC	<i>Establish and maintain partnerships with patients</i>
NMC	<i>Treat people as individuals and uphold their dignity Listen to people and respond to their preferences and concerns</i>
GPC	<i>Pharmacy professionals must provide person-centred care</i>
HCPC	<i>You must listen to service users and carers and take account of their needs and wishes</i>

Table 3.1: Professional standards to promote the social contract (GMC, 2013, p.46; NMC 2015, p.6; GPC 2017, p.8; HCPC 2016, p.6).

A commonly cited definition of evidence-based medicine is ‘*the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients . . . integrating individual clinical expertise with the best available external clinical evidence from systematic research*’ Sackett et al. (1996, p. 71). Therefore, knowledge for professional practice is domain-specific and occupational rather than generalisable, and influenced by situation, local culture and context, as Billett (2011) has argued. Greenhalgh et al (2014) agree, and strongly advocate a strengthening of the value of context and professional expertise in the application of evidence.

The route to personal and professional development is identified by several authors. Although designed primarily to aid in assessment processes in the medical context, Miller (1990) visualised the development of professional practice as a pyramid, whereby increasing levels of professional practice is represented as moving toward its peak. This similarly appreciates and identifies the different forms of knowledge required of doctors, and the depth of application and integration demonstrated within professional practice. The lower level ‘knows’ equates to Aristotle’s ‘episteme’. The ‘knows how’ and ‘shows’ demonstrates ‘*techne*’ – the ways in which this knowledge can

be applied to practice. The integration of such forms of knowledge or 'knowing' is, the integration of 'scientific knowledge and professional values with practical knowledge and clinical competence' (Jonsson et al, 2014 p.91). It is unsurprising therefore that professional practice is said to require 'a prolonged period of learning, instruction and experience' (Hilton and Southgate, 2007 p.270).

Within nursing literature, professional practice and subsequent development is commonly illustrated by way of the novice to expert skills acquisition continuum, developed by Benner (1984) in the light of observational studies, and in consultation with Dreyfus and Dreyfus (1986). Benner (1984) posits that the novice nurse uses rules derived from theoretical knowledge to inform practice. Moving on, the widening experience of the advanced beginner leads to the development of situational awareness, but this can lead to feeling overwhelmed in situations of complexity, in the attempt to remember and apply these 'rules'. With developing competence, the nurse begins to display judgement, rather than strict application of the 'rules', taking ownership and increased emotional investment in decision-making. For the proficient nurse, actions become less stressful as s/he can more easily determine the relevant issues, but still needs to consciously decide how to act. The expert practitioner instinctively knows how to act, by intuitively discriminating between available options – the concept of 'expert' is critiqued in more detail in section 3.1.2.

This model places a greater emphasis on the learning and development which occurs *within* clinical practice and how this is enacted, in contrast to evidencing understanding and application via the knowledge domains of Bloom (1956), Miller (1990) and Billett (2011). This contrast may well be attributable to the distinctions between the more scientific medical knowledge base, identified by Boshuizen (2006), and that of professional nursing knowledge, which has been (and in many ways remains) contentious. Willetts and Clarke (2014) maintain that professional identity amongst nurses has (and can remain) problematic partly due to its development from an apprentice model to that of a graduate education, and in addition its close theoretical connections with other health professions, thus in effect limiting nursing's capacity to 'own' specific theoretical foundations. An additional feature of nursing and the wider health professions is that post-graduate development is less structured, and less practically and financially supported than that of the medical profession (RCN, 2016).

The highest level of professional expertise, or practical wisdom is often referred to as ‘phronesis’. Chiavaroli and Trumble (2018) suggest the use of the word phronesis is increasing, and with it the need to be clear on what it means given that different professional disciplines have embraced its use. It not only refers to practical knowing but also implies wisdom and the inclusion of moral or ethical choices. Within the realities of clinical practice decisions are made based on the individual patient and the specific context, and as alluded to earlier, evidence-based medicine supports these professional decisions, but may not always provide an indisputable answer (Sackett et al, 1987). Chiavaroli and Trumble (2018) propose ‘judiciousness’ as a modern interpretation.

Cruess et al (2016) suggest that Miller’s pyramid (Miller, 1990) needs to acknowledge the development of professional identity – ‘is’ – as in thinks, feels and behaves as a doctor. This similarly relates to the definition of phronesis and is equally applicable to other professions. Al-Eraky and Marei (2016) develop this further - since the management and care of patients is frequently delivered by multiprofessional teams, they suggest the need to include ‘do’ (together) as well as ‘does’ (as an individual). In addition, there needs to be an understanding of when and where to apply these skills, as identified by Custer et al (2012). The importance of individual practitioners working together as a team is reflected by the professional healthcare bodies.

	Standards relating to teamwork
GMC	<i>You must work collaboratively with colleagues, respecting their skills and contributions</i>
NMC	<i>Respect the skills, expertise and contributions of your colleagues, referring matters to them when appropriate</i>
GPC	<i>Pharmacy professionals must work in partnership with others</i>
HCPC	<i>Work, where appropriate, in partnership with service users, other professionals, support staff and others Understand the need to build and sustain professional relationships as both an independent practitioner and collaboratively as a member of a team Contribute effectively to work undertaken as part of a multi-disciplinary team</i>

Table: 3.2 Teamwork as a feature of professional practice

GMC (2014 p.6); NMC (2018 p.10); GPC (2017 p.9) and HCPC (2016 p.7)

The dispositional knowledge is recognised by the professional bodies, and enshrined in their standards, as depicted in Table 3.2. Referred to earlier by Billett (2011) this can be personal (as in drivers and motivators for learning), but also collective by way of shared

professional behaviours and tenets of practice. Thus, to deliver best possible practice, diverse professional teams need be cogniscent of the similarities and differences each bring to the situation, all of which have relevance and are influential to (multi-)professional practice and (inter-)professional development the realms of ‘communication, partnership and teamwork’ and ‘maintaining trust’ (GMC, 2014). Comparable to the exploration of the term ‘phronesis’ by Chiavaroli and Trumble (2018), praxis has been defined as ‘the embodiment and enactment of theory in practice, driven by a commitment to improving that practice’ (Ng and Wright, 2017 p.784). Ng and Wright (2017) acknowledge the importance of critically reflective practice to support professional learning, and that lifelong learning itself is an attribute of professional practice or praxis.

	Standards relating to continued learning
GMC	<i>You must keep your professional knowledge and skills up to date You must regularly take part in activities that maintain and develop your competence and performance</i>
NMC	<i>Maintain the knowledge and skills you need for safe and effective practice</i>
GPC	<i>Pharmacy professionals must maintain, develop and use their professional knowledge and skills</i>
HCPC	<i>You must keep your knowledge and skills up to date and relevant to your scope of practice through continuing professional development</i>

Table 3.3: Lifelong commitment to learning as a feature of professional practice
GMC (2014 p.6) NMC (2018 p.9) GPC (2017) HCPC (2016 p.7)

Passarelli & Kolb (2011) propose that lifelong learning is influenced by what they refer to as an individual’s ‘learning identity’ – the extent to which a learner recognises their ability to continue to learn. They conceptualise learning as process, less so outcome, however, I would argue that it can of course be both, as further learning can build on earlier outcomes. As Dewey suggests, “...education must be conceived as a continuing reconstruction of experience ... the process and goal of education are one and the same thing” (1897, p. 79).

A Delphi study from Davis et al (2014) invited recognised experts (by virtue of their relevant published literature and their work within nursing organisations) from the US, Canada and the UK, to contribute to an online collaborative exercise. Participants were asked to consider their concepts of lifelong learning (LLL); the characteristics and behaviours of LLL, and what is essential to support LLL. Agreed outcomes from this

venture, in order of priority were that lifelong learners needed to have a reflective approach to practice and learning; to not only ask questions but to follow through this activity to and find answers; that they enjoy learning and appreciate that knowledge expands and changes. They also needed an engaging and self-directed approach to their work and learning (Davis et al, 2014). The detail of the study is clear, with the aim being to provide clarity and generate further discussion.

In a later systematic review of lifelong learning strategies in nursing, Qalehsari Khaghanizadeh and Ebadi (2017) reported 8 main themes, with the study providing a similar level of clarity and critique. Like the Delphi study, this review identified the need to develop self-directed learning skills, including the ability to self-assess, the importance of cooperative learning, questioning and curiosity. In addition, lifelong learning included not only the acquisition of new skills but also to further develop existing skills. Such learning was supported by the clinical learning environment.

Learning descriptors within the affective domain impact on cognitive and psychomotor skills, and relate to our emotions - values, feelings and attitudes (Krathwohl et al, 1964). As in the cognitive and psychomotor descriptors they are arranged in a hierarchy of developing practice, moving from an awareness to listen or attend, to then respond and react, giving in effect the first signs of motivation. Increasing developments establish the value or worth attached to a phenomenon or behaviour. This may be demonstrated by sensitivity towards others, valuing diversity and differences. Such values are internalised and exhibited in overt behaviour of the individual. Moving on, values may need to be organised or prioritised, which may be a source of conflict, requiring the ability to make decisions and resolve conflicting feelings. Practice at this level is exemplified by values systems such as the acceptance of professional and ethical standards, accepting responsibility for behaviours, and looking to integrate the values held with activities and actions, including work practices. The highest attainment in this domain demonstrates a behaviour system that is congruent and consistent with personal characteristics, and shows a commitment to teamwork, professional judgment – including an ability to review such judgments in the light of new evidence.

Summary of the concept ‘professional practice’.

From this critical appraisal, concepts of professional practice refer to the knowledge, skills and behaviours required of all clinicians – learning within the cognitive, psychomotor and affective domains. Each professional discipline has a knowledge base, skill set and Code of Conduct which encompass such concepts (GMC, 2013; NMC 2015; GPC 2017; HCPC 2016). The continuum from novice to expert seeks to illustrate levels of practice attained by clinicians as they develop, and the integration of these elements evidences professional wisdom or phronesis. Understanding the multi-faceted journey to expert practice is fundamental to exploring or investigating how this level of practice is nurtured and maintained throughout a professional career.

The interpretation of Sipos et al (2008), is that learning, and indeed professional practice, engages ‘head, hands and heart.’ Their explanation acknowledges the interplay and connectivity between these domains, indeed their embodiment, rather than seeing them as distinct from each other. Identifying discrete components of professional activity may be beneficial, particularly when learning to be a clinician or indeed when investigating the complexity of workplace learning. However, their integration is imperative not only with respect to learning, but in the reality of the clinical setting and at higher levels of practice.

For this study, the concept of professional practice encompassed the knowledge, understanding and its integration; the practical skills, attitudes and application of these professional values and practices to the care and management of the critically ill child. Having critically analysed the concept of *professional practice*, the focus will now be directed towards that of expert practice, as part of the continuum of practice.

3.1.2 Concepts of ‘expertise’ and ‘expert practice’

Findings from the literature review identified a limited number of studies which had specifically investigated the informal workplace learning experiences of those working at the highest level of expertise, thus identifying the problem area and its potential for exploration. A critical appraisal of empirical and conceptual literature has identified the ways in which the term ‘expert’ and the characteristics of expert practice and expertise are viewed, explored and investigated. This is essential to inform not only how such expertise is evidenced within clinical practice, but also how it might be explored within empirical studies.

Definitions of expertise

A simple dictionary definition of an expert is '*a person who has extensive skill or knowledge in a particular field*' or who is '*skilful or knowledgeable*' and comes from the Latin '*expertus - known by experience*' (Collins online Dictionary, 2018). This definition is given with respect to knowledge and skills.

Wider definitions of expertise can appear dependent on the perspectives of those who research into this phenomenon. An expert may be commonly defined as having accumulated knowledge through experience (Eraut, 1994) through status, job titles or consensus (Shanteau, 1992), or by virtue of success in their profession (Boshuizen et al, 2006), by way of profession-based or reputation-based expertise. These criteria represent the socio-cultural aspect of expertise, in that society or other groups may give this label to individuals, making decisions on relevance, dependent on context (Gobet, 2016). Shanteau, a psychologist who has undertaken extensive research in the field of expertise and cognition, has a personal view, encompassing the above, suggesting that 'experts are operationally defined as those who have been recognised within their profession as having the necessary skills and abilities to perform at the highest level' (Shanteau, 1992 p. 255), although he suggests that an objective external view of defining competence within a profession or specific field is problematic since criteria are generally decided by these very experts.

Halliday (2018) in a concept analysis of expert nursing performance, contended that it was evidenced by the consistent utilisation of deliberate practice, leading to superior performance, and enhanced cognition.

Perceptions of expert practice and expertise

Apparent discrepancies and disagreements in perceptions of expert practice and expertise can be in part understood by differences in epistemological perspectives. Gobet and Chassy (2008) identify two ideological and philosophical paradigms through which expert practice and expertise may be viewed – positivist, and interpretivist. Although not exclusively so, psychological and medical research tends to view and investigate expertise via experimental and quantitative data collection methods, whilst nursing research into this phenomenon tends towards the latter. Kahneman and Klein (2009) refer to these approaches as either following naturalist decision-making,

whereby judgment is based on outcomes not specific performance, or alternatively investigating expertise in laboratory-based studies.

This is reflected in the following critical analysis which draws on seminal research from Benner (1984; 2001; 2009), Benner and Tanner (1987), Dreyfus and Dreyfus (1986; 2009), and Ericsson, (1993; 2004; 2015), as well as a concept analysis from Hutchinson et al (2016), and one from Halliday (2018), and primary studies from clinicians in practice (Smith et al, 2003; Morrison and Symes, 2011; and Welch, 2016).

Expertise and knowledge

As identified and critiqued in section 3.1.1 both Benner (1984) and Dreyfus and Dreyfus (1986) conceive of the development of expertise as arising from experience within and resultant from practice, and consider that experts have tacit, implicit knowledge, arguing that what is learnt from experience and applied in practice is an equally valid means to demonstrate expertise as are more tangible features. The observational and interview data reported by Benner (1984) focused on nurses and nursing practice, whereby, she argued, the expert nurse evidences an intuitive mode of reasoning and a grasp of situations which stems from a deep understanding of this situation, based on internalised tacit knowledge.

From a different perspective, that of cognitive psychology, Shanteau (1992) also agrees with the notion that expertise develops in stages, from cognitive (memorisation of facts), through associative (connections between elements strengthened) to autonomous (effective and efficient practice) (Fitts and Posner, 1967, cited by Shanteau, 1992). Psychologists Gobet and Chassy (2008) disagree with some of the elements of the theory of expert intuition put forward by Dreyfus and Dreyfus (1986) and Benner (1984) and contend that the 5-stage continuum is too simplistic to explain the complexity of human learning and expertise. However, similar to Shanteau (1992) they agree that the concept of intuition (which they describe as being a perceptive and holistic assessment of a situation, thence leading to a high-quality solution) can be explained by further psychological studies which identify that pattern recognition arises from 'chunks and templates' stored within memory (Gobet & Simon, 2000; Lane, Cheng, & Gobet, 2000).

In later work, Dreyfus and Dreyfus (2009) argue that in their view expert practice moves from principles to the particular case, and not as may be imagined in the other

direction. In the light of progressive understanding, they also note how neuronal activity is modified in response to experience, in essence incorporating findings from cognitive psychology into their argument, which they suggest support their hypothesis. In a study situated within the critical care context, Benner and Tanner (1987), reached similar conclusions. Their findings identified key aspects of the intuition of nurses as including pattern recognition, recognition of similarity to previous events, and skilled know-how, which they consider to be synergistic in the promotion of expert intuitive judgement.

In contrast to Benner and the Dreyfus brothers, Ericsson, a psychologist, has investigated expertise from a positivist perspective. Using previous empirical evidence Ericsson et al (1993) identified a theoretical framework referred to as 'deliberate practice' as a means to gaining expertise. This initial study investigated firstly the practice and accomplishment of three groups of violinists, then secondly a similar study of pianists, identifying that the best performers spent much time in 'deliberate practice' - a specific activity which required full concentration – interestingly described as effortful rather than enjoyable. Rather than talent or innate characteristics, Ericsson et al (1993) argue that this effortful practice, over a decade or more, accounted for much of the differences in outcomes and level of performance. Therefore, individuals need to maximise the time spent in deliberate practice as this is closely related to their 'expert' performance (Ericsson et al, 1993).

Ericsson (2004) has also applied this model to the investigation of post-graduate specialist medical practice. His argument is that investigation into expert performance requires identifiable standard tests in three common essentials of medical practice – diagnosis, clinical assessment and assessment of clinical psychomotor skills. He recognised the difficulty in judging individual expertise based on clinical success, due to variations in the severity of the presenting complaint, and the individual patient, as well as the impact and input from the wider professional team. However, I would argue that this later analysis is the very essence of authentic and actual clinical practice, and that removing the clinician from the context could impact on his/her performance and therefore the empirical findings.

In a later paper Ericsson (2015) compared 'mastery learning' (focused on short term goals) with that of his deliberate practice/expert performance model, founded on identification of longer-term goals to promote continued learning. He argued that by actually identifying the end-product of expertise - that is, an objective measurement of

'reducibly superior performance' (Ericsson, 2015, p.1471) - focused and goal-driven training with feedback would not only improve this performance but give the tools and skills to self-regulate over a professional career. McGaghie and Kristopaitis (2015) take a similar almost reductionist approach in their efforts to define expert practice, whilst appreciating that this might be more relevant to certain aspects of practice and specific disciplines, citing radiology with focused skill domains as more appropriate than more dynamic environments, as exemplified by the PICU.

Hambrick et al (2018) recognise that deliberate practice can clearly be an important predictor of outcome but not to the extent that Ericsson and colleagues (1993; 2004; 2015), would portray. They argue for a model which takes account of both psychological traits and training, which can contribute in different ways to influence the development and attainment of expertise. Their central premise is that 'expertise is multiply determined, and thus can never be adequately understood by focusing on one factor or one class of factors' (Hambrick et al, 2018, p.291).

The relevance of context on expertise

Studies from the cognitive science tradition (Shanteau, 1992) indicate that expertise is domain specific, and limited to specific areas of expertise and not transferrable to other areas. Billett (2001) states that knowing in practice 'integrates the cognitive, social and cultural elements of expertise.' (Billet, 2001, p.445). This recognises the impact of the social setting and local culture, and expert practice, and argues 'that there is no such thing as an occupational expert per se ...' but that such judgements are made in practice and dependent on the '... efficacy and elegance or otherwise of that practice' (Billett, 2011 p. 25). Also, context in medicine is non-bounded (as opposed to, for example, a game of chess) and in addition non-linear and dynamic (Durning et al, 2010), also relevant to the practice of other healthcare professions.

In an integrative literature review of expert practice of clinical nurses Morrison and Symes (2011) not only recognised the relevance of context, but also that prior knowledge of the patient can lead to practice specifically relevant to individual needs and circumstances. Similarly, a concept analysis from Hutchinson et al (2016) found that whilst expertise requires underpinning theory and knowledge, and experience, these influences are contextually and situationally-driven.

Forms of knowledge and utility of knowledge in expert practice

In a qualitative, non-participatory study, gaining data from observations and semi-structured interviews amongst anaesthetists in the UK, Smith et al (2003) reported that consultant anaesthetists exhibited different types of knowledge in their practice, viz. social - resultant from their personal contact and assessment of the patient; theoretical knowledge; and experiential knowledge. Expert anaesthetists needed to respond to dynamic changes in patient physiological status, and that this level of practice was underpinned by a larger repertoire of skills and knowledge, gained from an apprenticeship way of learning. They concluded that 'textbook' knowledge, though important, is insufficient for clinical expertise.

A team of nursing academics from the UK and Australia, Hutchinson et al (2016), undertook a concept analysis of nursing expertise. The methodology and rationale for the review was clearly explicated, including the quality review criteria. Data from 16 empirical studies undertaken since Benner's seminal study (Benner, 1984) were synthesised to identify the defining attributes of nursing expertise, the majority of which used Benner's study as a theoretical framework. The framework Hutchinson et al (2016) developed to illustrate this synthesis proposed that relevant experience, theory, knowledge and skills form 'chains of knowledge' leading to 'networks of understanding'. The chains of knowledge related to content of learning, relevant experience, theory knowledge and skills, as depicted by sensitivity to the context, the ability to discriminate and recognise what is important, together with a prompt appreciation of events.

The expert nurse therefore demonstrates integration of various forms of knowledge, and the ability to discriminate and anticipate the subtleties of the situation, thence to integrating knowledge with confident and salient action. Reflexivity transforms experience into expertise. Although not referring directly to findings from cognitive psychology studies, their framework appears similar to the notion of 'chunks and templates' referred to previously.

In their analysis Hutchinson et al (2016) referred to Dreyfus and Dreyfus (1986) and their argument that experts find difficulty in articulating their expert knowledge, due to its tacit nature. They suggest that since 'shared language is a mark of expertise' (Hutchinson et al, 2016 p.12) those with the higher levels of expertise should exhibit (or strive to exhibit) this articulation.

In an unpublished Doctoral study, using a grounded theory methodology, Welch (2016), suggested replacing the relatively nebulous construct of intuition in the novice-expert model to that of tacit understanding. She summarised her findings by describing the expert nurse as one who has experienced focused and repetitive practice which provides 'intensity and duration to promote learning' (Welch, 2016 p. 137). Such expertise should also demonstrate a comprehensive knowledge base to support independent critical reasoning, and a personal commitment to achieve this level of excellence. This was a small sample size of 10, but of interest is that the sample is representative of a cross-section of critical care settings.

Expertise and its continued development

Although he strongly argues for the need for deliberate practice, Ericsson (1993) finds from his study that it is not 'inherently motivating' (Ericsson, 1993 p. 368) and that the enjoyment and hence motivation, comes from the performance. Since deliberate practice requires effort, then the time spent needs to be calibrated to prevent exhaustion or, in effect, burn-out. However, Engeström (2004) reported expertise within the workplace to be developed amidst complexity – not the repeated practice advocated by Ericsson, as measured under controlled laboratory conditions.

In a later study, Feltovich, Prietula, and Ericsson (2018) found individual approaches to learning to be central to maximising learning opportunities in practice and include a willingness to engage in WPL. This involves embodied learning both independently and within workplace practices, using all senses, and being able to adapt learning in response to change. This seems to be a welcoming softening of previous approaches to deliberate practice.

Summary of the concept of 'expert practice and expertise'

Expert practice integrates knowledge, skills and behaviours at the highest level. For the clinician, their role and professional qualifications can be somewhat representative of this level of attainment, with the complexity and range of their cognition and practice indicative of the level of their expertise. There are contrasting views as to how expert practice may be gained and measured whereby empirical studies and conceptual papers on expertise within medicine and nursing tend to follow differing approaches to their investigation and exploration of expert practice – either the more

tangible, observable and measurable features, or those of intuitive, embodied situated, experiential expert practice. Dreyfus and Dreyfus (1986) and Benner (1984) argue for recognition of the latter, whilst Ericsson (2015), and McGaghie and Kristopaitis (2015) claim the need for a positivist approach to such judgments. Gobet and Chassy (2008) suggest the need for constructive dialogue, combining what they refer to as ‘soft and hard methods’ (Gobet and Chassy, 2008 p.23) amongst those investigating expertise within the natural sciences, and those approaching it from a phenomenological paradigm.

3.1.3 Conceptualising ‘informal workplace learning’

Within academic literature ‘informal workplace learning’ as a concept may be referred to as ‘workplace or work-based learning’, ‘informal learning’, ‘non-formal learning’, or ‘incidental learning’. The following section critically appraises evidence of how this concept is regarded prior to defining and justifying its meaning and descriptor for the purposes of this study.

Definitions of Informal Workplace Learning

Marsick and Watkins (2001) have investigated and theorised on the concepts of informal workplace learning, and in this update of their earlier work they define informal learning as usually intentional, but outside of formal structures, taking place amid everyday routines, and a chance occurrence. Incidental learning, they explain, results from an activity or interactions with colleagues, or maybe by gaining an understanding of the culture of an organisation – socialising into a setting. Other examples include learning by trial and error or through mistakes. This learning may be unconscious, and certainly less intentioned than that of informal learning.

From longitudinal studies exploring and investigating professional learning Eraut (2000, 2004) identified a typology of non-formal learning, using the terms implicit, reactive and deliberative learning, to differentiate between levels of engagement or recognition of learning by the learner. Implicit learning recollects past experiences and links them to the current situation. Reactive learning, he suggests, is brief almost spontaneous reflection incidental to the currently-experienced situation, whereby the experience is recognised as a learning opportunity, which then promotes preparation for emergent learning opportunities. Finally, deliberative learning reviews the past, and

engages with the present learning experience, which in future could lead to planned learning opportunities (Eraut, 2000, 2004).

Capitalising on Informal Workplace Learning

There are conditions relevant to harnessing the potential of these forms of learning, namely the '*critical reflection to surface tacit knowledge and beliefs; stimulation of proactivity on the part of the learner to actively identify options and to learn new skills to implement those options or solutions; creativity to encourage a wider range of options.*' (Marsick and Watkins, 2001 p.31). Such conditions are all potentially applicable to both the workplace in general and the clinical workplace specifically. Of relevance here are notions of critical reflection and motivation on the part of the learner, thus increasing awareness to utilise these opportunities. Marsick and Watkins (2001) recognise the need for this active engagement and add a note of caution – in the absence of critical reflection learners may hold incorrect assumptions or learnt errors. Such definitions share aspects of Schön's notion of reflection-in-action (Schön, 1987), and the benefits to be had of conscious in-depth engagement with work experiences to support learning.

The wider context of Informal Workplace Learning

Two reviews, one from Fenwick (2008) and a later one from Sawchuk (2010), give an overview of workplace learning research from a wider perspective. Fenwick (2008) led a team of educator researchers to undertake a review of workplace learning research, focusing particularly on the relationships between individual and collective learning in the workplace. The journals which contributed to this review were published from 1999-2004. The methodology, with inclusion and exclusion criteria, is clearly defined. From the 208 relevant papers eight themes were identified relating to individual and collective learning.

A later wide-ranging review and critique from Sawchuk (2010) was designed to identify significant scholars and their research within workplace learning. An additional intention was to inform the future researchers of workplace learning across a range of disciplines, to promote dialogue across such boundaries. His analysis identified key areas of enquiry. These reviews are summarised in Table 3.4: Themes of enquiry related to Workplace Learning.

These findings informed the design and justification of the learning theory continuum and identified potential themes of enquiry for my own study, including the need to recognise the ways in which an organisation may adversely affect workplace learning opportunities.

Identified themes from the reviews		Input into conceptual framework
Fenwick (2008)	Sawchuk (2010)	
Individual knowledge acquisition	Cognition, expertise and the individual	Learning as enacted by the individual; cognitive and experiential learning
Sense-making/reflective dialogue	Micro-interaction, cognition and communication	Individual and group reflective discourses promote learning in the workplace; constructivist learning
Communities of practice	Mediated practice and participation	Learning as participation in work activities; social constructivism
Co-participation/co-emergence		
Individual human development	Meaning, identity and organisational life	Growth and development interwoven within workplace practices; constructivist learning within workplace groupings
'Levels' of learning		Organisational, team and individual learning is (and may remain) discrete within these specific groupings; constructivist learning across hierarchies
Network utility	Authority, control and conflict	Organisational structures can engender (via networks) or inhibit (misuse of power or authority) shared learning
Individuals in community		Environmental factors mediate individual learning; learning and workplace culture
	Competitiveness and knowledge management	Potentially negative learning environments in the clinical workplace; barriers to learning

Table 3.4: Themes of enquiry related to Workplace Learning - after Fenwick (2008) and Sawchuk (2010).

Current empirical workplace learning findings

A large-scale, descriptive, quantitative analysis of workplace learning undertaken by Billett (2015) was conducted across 33 countries utilising nearly 7,500 datasets. Workers were found to learn from engagement in their work, giving such examples as rehearsing and refining their activities, and the ways in which they interact with co-workers and workplace materials and objects. He found that the older and more senior the worker, and the higher the level of education (particularly in professional occupations) the greater discretion there was over managing their work – its

sequencing, the task, and the pace. This he refers to as workplace affordances – that is the availability of - and access to - learning opportunities.

Problem-solving was a feature of such learning. Readily solved problems supported reinforcement and refinement of practice, whereas more complex or non-routine problems supported new learning or re-organising of conceptual understanding, and the ability to bring together disparate knowledge and understanding to form new knowledge or ways of working. In this study instances of learning from workplace activity are more prevalent than learning from the support of others, although he cautions against necessarily associating frequency with importance.

Teunissen (2015) incorporated his own empirical research with that of other studies to propose a three-tiered framework of practice-based learning. The levels within his framework indicate how individual experiences can be accumulated, influencing development and identity. Learning may be clearly understood and explicit, with personal agency influencing direction, or unplanned and happenchance, and possibly remaining tacit. Finally, the third level recognises that clinical practice can influence and in turn is influenced by forms of activity that make real or more concrete the impact of such activities. This model frames the longevity and complexity of workplace learning.

Teunissen (2015) proposed that all members of the clinical team are learners, not just those with 'learner' in their obvious role, such as student, undergraduate or postgraduate learners, and identified a particular challenge of research into workplace learning. When learning is thought of as gaining new knowledge this is easier to identify and quantify, but learning may also be reinforcement or subtle change in behaviour which is harder to recognise or trace back to its origin. Billett (2016) would agree, in that within health care workplace settings engagement in activities and interactions can lead to learning in its broadest sense – resultant change in what is known, what a clinician can do, and the values they subscribe to. Practitioners may be unaware of such incremental learning, so may be difficult to recollect, and therefore not always captured by all empirical studies.

A critical review reported by Williams (2010) centred on work-based learning as applicable to post-registration nurses. At this stage in their career nurses needed to be active learners in order to capitalise on the opportunities for learning within the workplace. The workplace culture was influenced by the ward manager – specifically, an

appreciation of the value of informal and experiential learning in order to support ongoing professional development.

In a similarly critical review of clinical workplace learning research, Dornan (2012) compared findings from Dutch and UK medical education studies. As has been likewise identified from Williams (2010), Eraut (2011), Teunissen (2015) and Billett (2016), learning occurs in the everyday practices of clinicians, and is in addition supported by feedback and professional discourses. The default position of many if not all papers in this review support such premises. For example, although not the primary focus of their research into motivation, van de Wiel and van den Bossche (2013) found learning to be closely linked to the everyday work of clinicians, with Dornan (2012) identifying learning to be dependent on relationships across intra and inter-professional boundaries.

The cultural and contextual nature of the workplace influence and impact on the learning environment (Dornan, 2012). Furthermore, there are barriers to workplace learning, such as an onerous workload, which was specifically identified in his paper with relation to post-graduate medical trainees. Also documented was the importance of continued learning in the workplace, and although not part of his review, is also very relevant to the professional clinical disciplines outside of medicine who have a much shorter period of formal learning, in the undergraduate phase. Whilst both these reviews have drawn on empirical studies, they could have benefitted from an acknowledgement of how the quality and relevance of the included papers were adjudged.

The individual within workplace learning studies

Eraut (2004, 2007) argues that individual perspectives can give greater understanding how we learn and also interpret what we learn. The social element acknowledges the cultural setting – where this learning takes place and the practices and ways of working within a specific workplace. In a critical review of professional agency, Etalapelto et al (2013) identify that it is this agency that links the individual with the workplace and its social, cultural and material elements.

The potential lines of enquiry related to research into workplace learning, and incorporated in the interview design, were distilled from such questions identified by

Eraut (2004) and also those acknowledged by Engeström (2010) as fundamental to studies with this focus, namely:

- Who are the learners?
- Where are they situated?
- What do they learn?
- What are the processes of learning?
- Who or what influences the direction of their learning?
- Who or what supports their learning?

After Eraut (2004) and Engeström (2010)

Summary of the concept of informal workplace learning

The concept of learning within the clinical workplace can be referred to in terms which include workplace or work-based learning; informal learning; non-formal learning; incidental learning. Learning may be implicit or intentional (Marsick and Watkins, 2001; Eraut, 2000 and 2004), however, greater engagement and critical reflection positively impacts on learning (Teunissen, 2015). Problem-solving activities within the clinical setting give opportunities to reinforce, integrate and apply disparate knowledge and understanding, extend previous learning or develop new learning or ways of working (Billett, 2016). Personal agency can drive such engagement (Etalapelto et al, 2013; Billett, 2016), particularly if individuals are open and aware of such opportunities, although the social and cultural setting can positively or negatively impact on such learning (Fenwick, 2008; Sawchuk, 2010 and Williams, 2010).

The term I have used to describe informal workplace learning as relevant to this study is Workplace-Initiated Learning (WIL) - that the catalyst or trigger for this learning begins in the workplace. This definition indicates the boundaries of such learning whilst maximising the potential role that the clinical workplace plays in the instigation of learning.

3.2 The rationale for a theoretical framework

Knowles et al (2005) defined theory as '*a comprehensive, coherent, and internally consistent system of ideas about a set of phenomena*', (Knowles et al, 2005 p.10). And in a critical review of the quality of theoretical frameworks as applied to empirical studies, Hean et al (2016) concluded that such a framework can help '*describe, explain, predict or measure a phenomenon*.' (Hean et al 2016 p. 616). Sections 3.2 – 3.4 provide the rationale for the relevance of an integrated continuum of learning theories

through which to view and explore the potential diversity of learning processes the clinical workplace affords.

Theoretical frameworks consist of collections of inter-related ideas and assumptions, which can contribute to the conceptual framework of a study and provide a lens through which to explore findings (Hean et al, 2016). The previous section, 3.1 *Defining concepts*, has critically analysed and justified the relevance of core concepts relating to professional practice (professional knowledge and its application, clinical skill set, and professional dispositions), notions of expertise and expert practice, and the concept of informal workplace learning, culminating in a definition of Workplace-Initiated Learning (WIL). Acquisition and refinements of knowledge and skills, and development and modification of behaviour can be explored and understood utilising theory.

To practise as clinical professionals within a paediatric intensive care team requires the integration of knowledge, skills and behaviours. Clinicians within healthcare bring to their practice the depth and breadth of their knowledge, their psychomotor skills, and the ways in which they behave and interact with both the patients they care for, and for their fellow members of the multiprofessional team. This professional wisdom (phronesis) and professional practice (praxis) is diverse and may be gained individually and collectively, and more deeply understood through the lenses of learning theories. Therefore, this next section identifies and justifies such learning theory as relevant to the focus of this study.

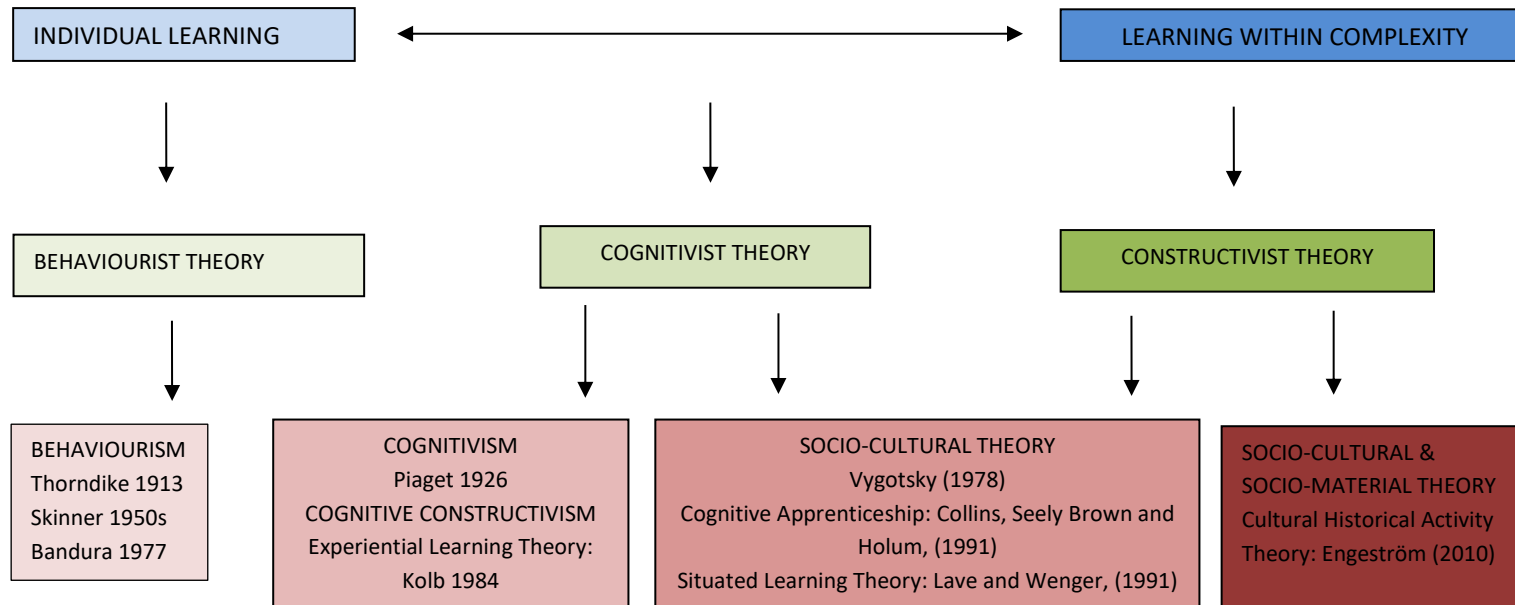
Since phronesis and praxis are complex practices, then I contend that no one learning theory is able to explain all forms of learning. The workplace is an important source of continued learning; a phenomenon with a multi-faceted nature. These key learning theories identify potential processes of learning within the clinical workplace, and form a theoretical framework, which has contributed to the overall conceptual framework of the study.

In a review designed to identify and depict the interconnectedness of learning theory relevant to interprofessional education, Hean et al (2009) developed a figure to explain these connections. The review and its design are not of direct applicability here, but what was of interest to me was the notion of a diagrammatic figure itself. This led me to consider presenting these identified theories as a continuum, and led to an initial framework design (Cochrane, 2011). I have since developed the framework further to

include behaviourism theory and have also reversed the continuum to the more logical left to right 'individual learning' to 'learning within complexity' continuum as might be seen on the x-axis of a graph.

The continuum of learning theories, figure 3.1, incorporates a range of ways in which learning is initiated and supported within the clinical workplace. Moving across the continuum from left to right, not only evidences the historic development of learning theory, but also its increasing complexity, whether that be within the individual, the context or indeed both. The staff participating in this study were senior members of the MPT, with each clinician and each professional discipline making their own unique contribution to effective patient care. Therefore, learning can take place at the level of the individual, either implicitly (through active engagement and recognition of an opportunity), or by way of the many interactions with patients and colleagues that occur throughout everyday work practices. Studies within the literature review, chapter 2, section 2.1, likewise identified learning as a by-product of clinical practices and engagement with patients, and experienced and co-constructed amongst clinical colleagues. There are in addition internal and external mediators influencing opportunity, motivation and depth of learning. The local context and culture, and its history, also influences the learning environment, and in addition, the material elements of the workplace provide tangible sources of engagement for learning.

Figure 3.1: Figurative representation of theories and theorists relevant to my research



Adapted from Cochrane (2011)

The following section critically analyses the relevance of each of these grand theories and provides a rationale for their inclusion as lenses through which to interpret WIL, as experienced by individual clinicians. Social constructivist theory was the most prevalent of the theoretical constructs evidenced in the literature review. However, this is not the sole possibility. To limit this study to one specific theory would have pre-suppose the learning experiences and responses, and potentially omitted areas of importance to these participants.

3.3 Theories of learning

Definitions of learning

Our personal definitions and concepts of learning influence our responses to learning and teaching in much the same way as the theorists of the past sought to investigate and explain mechanisms and structures of learning, based on their current understanding. A straightforward dictionary definition simply states that to learn is

‘to gain knowledge of (something) or acquire skill in (some art or practice)’; ‘to commit to memory’; ‘to gain by experience’; ‘to become informed; know’

Collins online dictionary (1991)

Learning theory has developed over time and reflects the increasing complexity as to how and why we learn, and the internal and external effects on such learning. This continuum accommodates individual learning processes, group learning and learning within complexity – the extent of possibilities and potential processes of learning accessible within the clinical context.

3.3.1 Behaviourism theory

Behaviourism theory notably the work of Thorndike in 1913, and Skinner in 1950 (Aubrey and Riley, 2015) centred on the importance of measurable observable behaviour. Both researchers were psychologists and gained empirical data from animal experiments to demonstrate that a designed stimulus can give rise to a desired response (Taylor and Hamdy, 2013). Rewards of food increased the strength of the link between a stimulus and a response, with Skinner (1953) reporting that behaviour was likely to be repeated if there followed a pleasurable outcome, with the opposite being true. However, this model does not take into account internal processes of learning via higher

levels of consciousness, nor our desire to make meaning of experience. In addition, this tends to place learners in a more passive role.

For this reason, I initially considered such theory irrelevant to my framework. However, on reflection I appreciated examples of the importance of changed or reinforced behaviours for example the need to adopt Universal Precautions (WHO, 2007) and the benefits of a structured approach to patient deterioration (Resuscitation Council, 2015). This theory also supports the processes of factual recall and performance of a procedure, and underpins criterion-referenced assessment, employed in undergraduate and post-graduate formal assessment (Aubrey and Riley, 2015).

3.3.2 Cognitivism theory

The 1950s saw a move away from purely behaviourist theory to a recognition, amongst psychologists and educators, of the importance of cognition – problem-solving, critical thinking and the processing of information, whereby learning and acquisition of knowledge is internally coded and structured by the learner (Aubrey and Riley, 2015), including not only knowledge but when and where it may be used. Within this theoretical model, feedback is used to promote mental structures or schema (Ruiter et al, 2012) and support the learner to build on previous knowledge and understanding.

In contrast to behaviourism, cognitivist theory acknowledges the relevance of cognition behind observable learning activities. From the perspective of the individual, cognitive constructivism relates to the higher order thinking consequential to learning. An example of this comes from the work of Piaget (1926), who researched and theorised early learning, and proposed Cognitive Development Theory. His research posited that when children encounter new experiences they both accommodate it to their existing understanding, and restructure and assimilate it to develop new levels of understanding. This process of accommodation and assimilation continues throughout adulthood, giving learners an active role in this process. Longitudinal studies of college students, undertaken by Perry (1970) a University professor, supports this, and indeed suggests that not all adults will progress from dualist thinking to relativist, critically analytical thinking. Here is premised that knowledge is constructed within the person, and in response to active engagement with their experiences – sense-making, using experience and knowledge.

Bandura (1977) was broadly in agreement with behaviourist learning theory, whilst recognising the potential mediators between stimuli and responses. This was verified in experiments he undertook with children which demonstrated ‘vicarious learning’ following their observation of the behaviours of others and the resultant consequences. If the consequences were positive, then the behaviour was more likely to be adopted and vice versa. These findings give greater depth to the concept of behaviourism.

Experiential learning is cognitively constructivist in origin, and Kolb’s experiential learning model drew on scholars such as Dewey, Piaget and Vygotsky, who identified experience as central to their theories of learning and development (Kolb, 1984; Passarelli and Kolb, 2011). Learning is best considered as a process, rather than outcome, requiring physical engagement, and active reflection on experience. The experiential learning model is cyclical in nature and applicable to the individual. To summarise, we experience or take part in a situation, observe and reflect on it, think about and develop new concepts and connections, then see if they apply in new situations. Therefore, learning can be deepened by this spiral of development, requiring learners to revisit their practice and previous understanding to deepen their learning.

Criticism of this model centres on its validity, and the notion of associated learning styles (Coffield et al, 2004) as determined by a self-assessed inventory. Yet it remains a practical framework through which to understand the cyclical nature of learning (Aubrey and Riley, 2015), as demonstrated in a review from Yardley et al (2012). It identifies the applicability of experiential learning to the clinical workplace context and indicates how this form of learning can be relevant at different stages of a medical career – undergraduate, postgraduate and beyond. This is equally relevant to other clinical professions, who in comparison may have a reduced length of time in formal education, with the experiential learning model a means to understand this process as gained within authentic (workplace) practice. Yardley et al (2012) also identify that opportunities for self-directed learning ‘on the job’ increase over time, and become more important, as a clinician has less opportunity for formal engagement with learning.

3.3.3 Constructivism theory

Constructivism theories posit that learning is constructed (or co-constructed) by our experiences, and as explained by Fleming (2011), requires insight and

understanding, which can relate to individual or group learning. Illeris (2009) contends that constructivist theory explains how individuals make sense of - and interpret - their world, by integrating experience and knowledge and thus constructing new meaning and understanding within our mental models. Learning is conceptualised as creation of knowledge or meaning, not purely acquisition. Another key feature is acknowledging the interaction between the learner and the environment – the critical importance of context. The concept of constructivism has been further refined, to include social, cultural and material influences.

The inter-activity acknowledged in **social constructivist theory** expands on the concept of individual constructivist learning. Vygotsky (1978) has been highly influential in this regard, theorising and investigating the influence of the social and cultural context on learning, and recognising the impact of physical or psychological mediating artefacts (predominantly tools and language) between the learner and learning. In the apprenticeship model, Vygotsky (1978) identified the role scaffolding and fading play in the support of learning, and the notion of the 'Zone of Proximal Development' (ZPD), based on observations of learning activities of young children. He considered ZPD to be the gap between what a child can achieve alone, and that which can be gained from the support of an adult. This is not confined per se to the development of children but also has relevance to how adults may learn.

Vygotsky's continuing influence underpins the concept of **Cognitive Apprenticeship**, whereby Collins et al (1991) used data from school children to inform its design. When those more expert and experienced model their skills and their expertise, apprentices can build on this and be supported in their development by the 'scaffolding' role of others, and be allocated easier tasks, or the more straightforward elements of a more complex procedure. This then leads to a 'fading' phase, similar to that described earlier by Vygotsky (1978) such that the support is gradually withdrawn, and the learner is able to take on the task or role independently. The 'cognitive' element of this model is promoted by the use of articulation, reflection and exploration, enabling experts to ascertain the underpinning knowledge and rationale of the learner, with reflection adding depth to this. During the final stage, exploration, learners practice independently. Collins et al (1991) consider that 'coaching' is a concept which can occur at each stage of this process – a guiding and encouraging role, moving towards independent practice.

The clinical workplace can give rise to the relevance and importance of ***situated learning***, as theorised by Lave and Wenger (1991) who emphasised the importance of *where* learning takes place. They also described how, by way of 'Legitimate Peripheral Participation' (LPP) what they identify as 'Communities of Practice' (CoPs) are important within the concept of situated learning, and it is within these communities that skilled activity lies. Lave and Wenger (1991) postulate that communities can benefit from the input of new members, by way of their questioning and their previous experiences. In their original research, the CoPs investigated by Lave and Wenger (1991) were single professional groups or craftsmen. In a later study by Wenger et al (2002), he acknowledged that a person can hold membership of more than one CoP. Fuller et al (2005), whilst accepting the contribution made to our understanding of workplace learning that these theories have brought, identify some limitations in the light of changes and increased complexity within the workplace. Their findings indicate that new staff joining a workplace can arrive with an established identity including previous knowledge and understanding, and there are circumstances where new workers teach established and experienced workers, with the roles of novice and expert potentially interchangeable.

Lave suggests it would be more accurate to portray knowledge and understanding within a situation or context as 'in a state of change rather than stasis, in the medium of socially, culturally, and historically ongoing systems of activity' (Lave, 2009 p. 207). Wenger (2009) clarifies that social learning theory is not intended to replace other theory, but to add to it, by way of its specific focus. 'Learning as doing', 'learning as belonging', 'learning as experience' and 'learning as being' integrate the key components of his concept of social learning (Wenger, 2009). Recognition by the authors and designers of such models as to the benefits of exploring learning through a number of theoretical constructs gives additional support to the utility of a learning theory continuum.

Bleakley (2006) notes that focussing only on the individual and their learning disregards the specific dynamics of the clinical workplace as a complex and unstable context and overlooks the ***socio-cultural and socio-material*** features of learning theory. The work of Engeström (2001) seeks to acknowledge and frame this complexity. His concept builds on the earlier theoretic constructs of Vygotsky and is referred to as Cultural Historical Activity Theory (CHAT) or second-generation Activity Theory. Not only

is there acknowledgement of the physical and material complexities of the workplace, but he places greater influence of previous (historical) practices and the impact culture can have on work practices and relationships.

Similar to Lave and Wenger's CoPs (Lave and Wenger, 1991), Engeström sees this activity system as the prime unit of analysis. However, he recognises individual actions and learning as subordinate units of analysis. Engeström (2010) considers that change, development and thus learning can take place in the midst of complex activities and inter-relationships, as a result of 'contradictions' or tensions in ways of working.

Such complexity of learning in this context is also recognised by Billett (2009) who writes of 'affordances' - activities, tools, values and norms – and the influences these have on personal engagement with learning in addition to learner's own histories, experiences and values. In a later paper, Billett (2016) further identifies that since clinical knowledge and practice are both influenced by history, culture and context, then practitioners also actively engage and make judgements as to its authenticity and relevance.

3.4 Motivation to learn

The theories identified explain potential processes of learning, however personal motivations to learn can explain depth of engagement with such processes. The psychologist Maslow used his professional experiences to develop his theory of human motivation, which he suggested should be a framework for future research, owing to a lack of data at that time (Maslow, 1943, 1954). He initially posited a five-stage model identifying a hierarchy of human needs (physiological, safety, love and belonging, esteem and self-actualisation needs) to which he added cognitive and aesthetic needs and transcendence needs (Maslow, 1987). Transcendence needs are evidenced when a person is motivated by values beyond the personal such as service to others. A further example given by Maslow is the pursuit of science – given the context of the PICU, this could be demonstrated as the pursuit of clinical professional practice.

Theory was grounded not on empirical data but rather a biographical analysis of whom he considered to be self-actualised individuals, most of whom were well-educated white males. This propensity to bias and lack of validity is a major criticism of his approach, as is the suggestion of the needs to meet lower needs prior to the higher ones. More recent research undertaken by Tay and Diener (2011) sought to test this theory, based on data from over 60,000 participants from across the world. Interestingly

the basic premise of universal human need was supported by this data, but not the ordering within a hierarchy.

From a positivist perspective, investigations from Ryan and Deci (2000) suggest that across an external-internal continuum, extrinsic motivation is externally regulated by the need to be compliant, and by external rewards and punishments. Self-control may be influenced by internal rewards, in that internal regulation is somewhat related to consciousness and values, and more highly related to 'congruence, awareness and a synthesis with self' (Ryan and Deci, 2000 p.72). Intrinsic motivation and regulation can also arise from 'interest, enjoyment and inherent satisfaction' (Ryan and Deci, 2000 p.72). Within medical education ten Cate et al (2011) suggest this applies to both undergraduate and specialist trainee development. Similar to Ryan and Deci, ten Cate et al (2011) recognise the need, as humans, to develop 'an integrated and unified sense of the self' (ten Cate et al, 2011 p.962). In addition, motivation can also result from feelings of autonomy, the need for competence, and to feel related to others.

There are other motivators identified within the literature that impact on the development of professional practice, such as the dispositional drivers for learning alluded to earlier (Billett, 2011). More specifically, and most relevant to this study, Skule (2004) suggest these drivers include exposure to changes, the demands of colleagues and patients, levels of responsibility, feedback and rewards, and general support for learning.

In summary

I return again to key questions posed by Eraut (2004) and Engeström (2010), of relevance to this particular section, namely theories of learning:

What are the processes of learning?

Who or what influences the direction of their learning?

Who or what supports their learning?

The framework of learning theories enabled these questions to be answered by its contribution to the conceptual framework. The theories identify processes of learning relevant to the clinical workplace, including facilitators and supporters of learning, whilst motivational theories have identified influences on the direction of learning.

3.5 The conceptual framework for this study

The problem space was first identified as a need for further understanding of the ways in which informal workplace learning may be experienced by postgraduate clinicians. The interpretive literature review has further refined the problem area to explore, that of workplace learning as experienced by expert clinicians. This gave rise to the research question and the research aims and objectives.

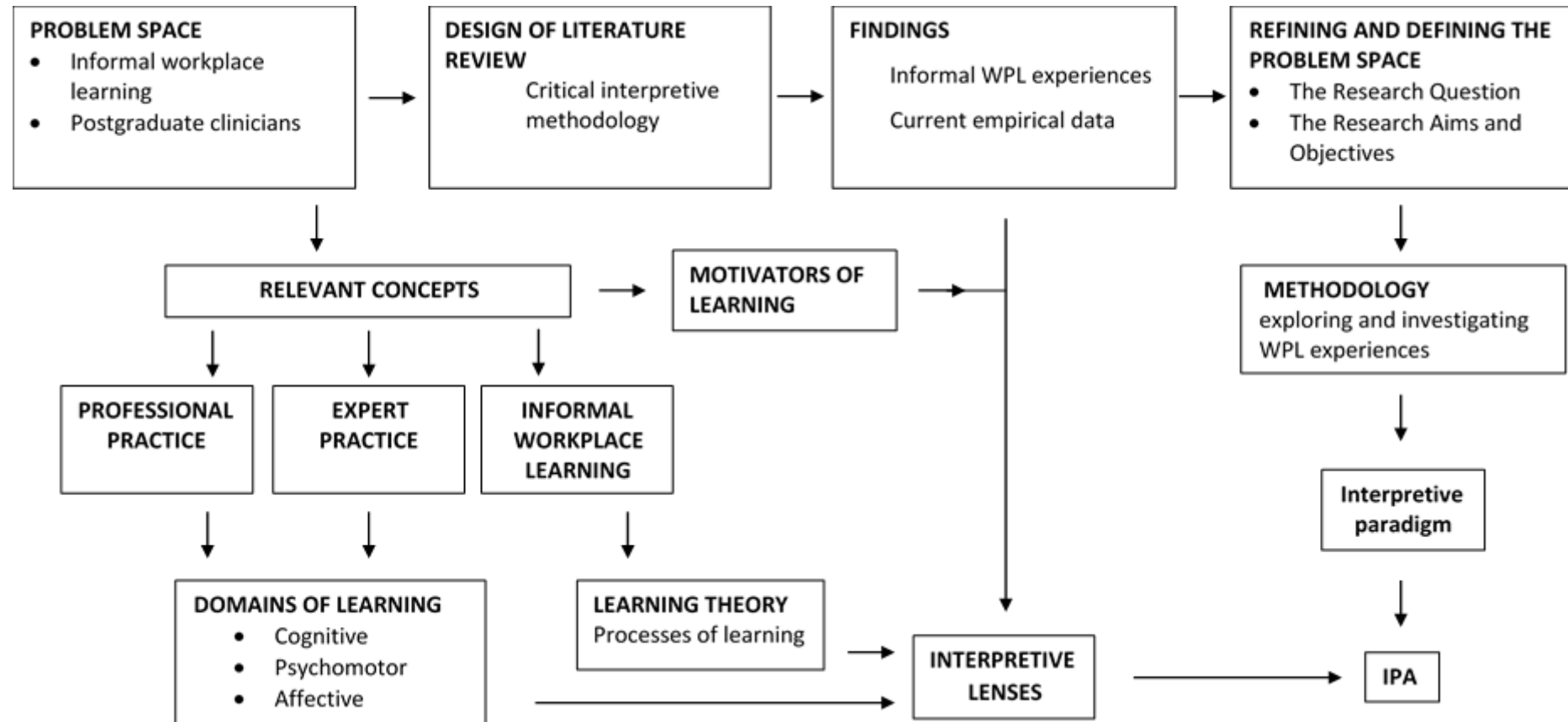
Previous studies within this review have utilised predominantly ethnographic and observation methodologies, whereby individual experiences may be subsumed within the overall findings. This study is designed to value and give rise to this individual perspective, thus further defining the problem space, by using an interpretive paradigm, specifically Interpretative Phenomenological Analysis (IPA). The rationale for this and its alignment to the aims and objectives of the study is explored in detail in chapters 4 and 5.

The concepts of professional practice and expert practice have identified domains of practice (cognitive or relating to knowledge; psychomotor or relating to skills; affective or relating to values, behaviours and emotions) and how this level of practice is conceptualised, explored and investigated.

Informal workplace learning has been similarly critiqued, identifying ways in which this is experienced, mediated and supported, and potential barriers to its utility. This has also identified a range of theories, across a continuum culminating in a theoretical framework.

The conceptual framework provides a structure this is a representation of the complexity surrounding this phenomenon (Bordage, 2009) and is depicted in Figure 3.2. Findings from the interpretive literature review, learning theory, and professional and expert practice provide the lenses through which to interpret the data.

Figure 3.2: Diagram to represent the conceptual framework



3.6 The research question

Following this critical appraisal, the research question was clarified

‘What perceptions do expert clinicians in a Paediatric Intensive Care Unit hold towards the experience of Workplace-Initiated Learning as a means to maintain expertise?’

3.7 The research aims

The aims of this study were:

1. to explore the ways in which individual clinicians within an expert multiprofessional team, in the context of a paediatric intensive care unit, experience workplace-initiated learning within the clinical workplace
2. to increase understanding of this under-researched form of learning at the ‘expert’ level of practice, to inform the development of experts of the future

3.8 The research objectives

The objectives of this study were:

1. To explore the value placed on this form of learning by these clinicians
2. To identify the ways by which learning is supported in this context
3. To identify any barriers of learning within this context

Part 3: Planning and undertaking the research - Methodology and Methods

This section demonstrates how the principles underpinning philosophical and methodological choices have informed the research design. The research question, the research methodology and the research methods should demonstrate a resonant relationship and alignment (Carter and Little, 2007). Thus, the knowledge and understanding sought by asking the research question has driven the research methodology, taking into account its underlying principles, and are elucidated in Chapter 4, Methodology. How these principles have guided the research methods and been applied and enacted in practice is the focus of Chapter 5, Methods.

Chapter 4: Methodology

A research paradigm is 'a basic set of beliefs that guide action' (Denzin and Lincoln 2000, p. 157). Decisions on how a study may be conducted are founded on positions held within philosophical assumptions, viz. ontology, epistemology and axiology (Creswell, 2012), and impact on all areas of this study (Carter and Little, 2007).

4.1 Positioning within key philosophical assumptions

These philosophical assumptions are explored in detail here, and with specific reference to the study design.

4.1.1 Ontology – the nature of reality or 'ways of being' in the world.

The PICU is not only a complex environment in which to practice, but is also a rich learning environment, in that children may be admitted without a clear diagnosis, and their individual responses to interventions and medications require careful monitoring and adaptation or titration dependant on need. The clinical workplace provides opportunities for learning, either new knowledge, skills or ways of working, or a deepening understanding and application of research to practice, as identified in Chapter 2. This study has been designed to accommodate such levels of complexity and diversity of experience, since the aim was not to make value judgments on any particular experiences, but identify what is of importance to individual participants, and extend the body of empirical evidence.

A social constructivist paradigm holds the ontological view that there are multiple realities and there is no one 'truth' to be uncovered (Denzin and Lincoln, 2011). An individual's knowledge and understanding is founded on their past experiences, and is influenced by their interactions with others, (Creswell, 2003). The study was designed to enable participants to make sense of, and identify, their individual experiences, with respect of WIL, this premise aligns with such a paradigm (Smith et al, 2009).

4.1.2 Epistemology - what is known, or what counts as knowledge or knowing.

The naturalist paradigm recognises the importance and influence of context and complexity, where the situation may well be multi-faceted in nature (Rubin and Rubin 2012). Within this paradigm, interpretivist constructionalism has at its core the assumption that knowledge is derived from individual experiences, and that there are multiple ways of knowing. The perspective of the researcher in relation to the subject under investigation and any relationship with the participants can have an impact on how these findings are interpreted and presented. Whilst acknowledging the challenges and possible biases this could bring, my aim is to use my understanding of this environment in determining what data can provide the most detailed account of this phenomenon, and how best may this be obtained. My own identity in relation to this study and the participants, has changed from clinical colleague to researcher/enquirer. The research study seeks to identify their experiences, similar or otherwise, and not any definitive experience. What follows is a detailed account of this appreciation of diversity.

4.1.3 Axiology - values and what is held to be of value.

Values and value judgments are held by us all. Kemmis (2009) suggests that there are multiple perspectives of practice, with standpoints neither innocent or privileged. Over the course of my career, I have had opportunities to explore and reflect upon the ways in which individuals may learn, and the preferred ways I have learnt. As individuals we have different preferences and experiences, and benefit from learning in many diverse ways. I value and celebrate such diversity, and this was reflected throughout the study design – from the research question, to the methodological assumptions made, and the consequent data analysis.

In summary, this research methodology is one in which multiple perspectives were acknowledged and accommodated, and in addition, facilitated and made positive use of a degree of researcher-insiderness, allowing for a reflexive exploration of potential biases and opportunities.

4.2 Methodological choices

A positivist approach implies that a research question can be answered to give concrete and measurable findings; it is this very measurability that gives value and meaning (Savin-Baden and Major, 2013). However, such a perspective did not align with the aims of this study and would not have accommodated individual experience.

Ethnography was used in a number of studies identified in the literature review in Chapter 3, for example Acharya et al (2014), Chatalalsingh and Reeves (2014), Mylopoulos and Farhat (2015), Newton et al (2015), Paradis et al (2016), and Waring and Bishop (2010). Their results are illuminating, and add to our understanding of WPL, however, in a purely observational study, there is limited opportunity for face to face discussion. This could be overcome by additional data from discourse either in the field or outside of the research setting. However, this methodology has the unit of analysis as the site of the research setting. Since the focus of my research question was to uncover the participants' experiences of workplace learning *in their own words*, and the extent to which this was relevant and important to their learning, then this is also inappropriate.

Phenomenology as methodology provided a potential fit and alignment. The underlying principle of this paradigm is an individual's experience of a reality (Gray, 2009), in this instance workplace learning, and the unit of analysis is the person. Within this paradigm, Savin-Baden and Major (2013) describe how the researcher looks for a depth of understanding of the focus of the study - the phenomenon. Again, what is also of note is not only this focus on depth, but that the researcher may uncover meaning even if the participants are unable to do so. What follows is a more detailed rationale for pursuing a phenomenological methodology.

4.3 Phenomenology as Methodology

Phenomenology as a research methodology was first developed by the German philosopher Husserl. 'Phenomenology' means the study of phenomena – as Husserl argued, 'the things themselves'. Kvale (1996) refers to it as both a means to understanding a phenomenon, and the way in which it is subjectively enacted or experienced – in other words, our individual perceptions of the world, and 'the study of human experience and the way in which things are perceived as they appear to consciousness' (Langdridge, 2007, p. 10).

Husserl argued for a move away from using scientific, positivist paradigms to study the subjective human experience, and for a different approach to enquiry (Husserl, 1997). He referred to the 'lived experience', that required conscious engagement or intentionality. The body is the link between the world and the self, with the body a means to experience the world. To uncover what he termed 'eidos', the essence of an experience, he reasoned for the need to put aside one's own perceptions, to 'transcend' these, referring to this as 'bracketing' or phenomenological 'epoche' from the Greek (Van Manen, 2011; Finlay, 2014). This essence derives from a reductionist approach and seeks to *describe* the phenomenon. My aim, however, was to acknowledge potential diversity of experience. In addition, taking this approach would not enable me to use my knowledge and previous experience (Finlay, 2008).

Throop and Murphy (2002) argue that a critical failure of phenomenology is to acknowledge the social influence on individual experience, with Eatough and Smith (2008) including historical and cultural factors as relevant. Therefore, a pure phenomenological approach would not take account of the context of the setting, which I argue is of importance and relevance.

Heidegger, a student of Husserl's, moved away from this concept of bracketing and description, or transcendental phenomenology, to one of interpretation, that is hermeneutic phenomenology (Mulhall, 1996). Heidegger held the view that the researcher, instead of putting to one side their prior knowledge and understanding, could use it to benefit and give input to this interpretation. He also contended that understanding was influenced by time and context, and identified the notion of 'Dasein', translated as 'being there' or 'being-in-the-world', a concept which is not fixed or measurable (Heidegger, 1927/1962). Therefore, in summary, espousing Husserl's arguments would generate descriptive findings of the essentials of an experience, without interpretation or meaning. In contrast, Heidegger contended that the researcher in their role as interpreter, is and can be equally as part of the research as is the participant, which allows for explicit utility of my knowledge of workplace learning and previous professional relationship with the participants.

Although I am rejecting Husserl's approach for this study, there are inherent elements which aid reflexivity. Husserl argued for the need to put aside everyday assumptions to identify the essence of an experience (Allen-Collinson, 2009). Exploring such assumptions helped in identifying my own preferences and potential biases, with

Maggs-Rapport (2000) suggesting that a 'fore-understanding' or initial understanding of the phenomenon can support interrogation and analysis, and therefore, I contend, be of positive benefit. Heidegger (1962) and Gadamer (1985) argue that it these very preconceptions or shared understanding with others that can guide interpretation and develop new ways of looking at a phenomenon.

Merleau-Ponty was a contemporary of Husserl and Heidegger, and both were influential to his thinking. Moving on from the concept of 'Dasein' he identified four fundamentals to existence – 'lived' space, 'lived' body, 'lived' time and 'lived' human relations, which acknowledge the importance of context to our experiences (Merleau-Ponty, 2002). Smith et al (2009) explain how these concepts mean we can never totally share an experience with others, as any experience is mediated through our own physical presence. In addition, as Willig (2008, p. 52) explains, 'intentionality allows objects to appear as phenomena', which explains how and why people can perceive and experience a phenomenon differently. Therefore, the phenomenon (in this case workplace learning) needs to be initially recognisable to participants such that they can articulate their experiences.

Appreciating and understanding the philosophical perspectives which underpin a methodology develop an informed argument as to its practical application, which can be shared and understood by others (Pringle et al, 2011). Regarding my position and relationship with the participants, and with my previous experiences of working in the environment, I wanted to use this in a positive and transparent way – fortunately, development of phenomenological methodologies is a dynamic and evolving process, and further investigation led me to Interpretative Phenomenological Analysis (IPA) and the work of Smith et al (2009).

4.4 Interpretative Phenomenological Analysis (IPA)

IPA developed from the perceived need for a qualitative paradigm relevant and appropriate for studies within the discipline of psychology (Smith, 1996). Its utility as a methodology has grown, and Smith et al (2009) acknowledge and support its use within other disciplines, such as health and social sciences. IPA is relational to phenomenology in that its theoretical foundations are clearly rooted within this philosophical paradigm. IPA aims to gain understanding of lived experience, including how people make sense of their personal and their social worlds, and how individuals give meaning to their specific experiences (Smith and Osborn, 2004). Tomkins and Eatough (2018) summarise this aim

as a systematic exploration of individual/personal experience. Researchers using IPA are committed to 'giving voice' to participants; to 'making sense' and look to gain an 'insider perspective' of these lived experiences.

In using a phenomenological approach, researchers seek to gain such meaning and understanding of how a phenomenon is experienced by gaining insights on participants' thoughts and feelings. In holding to this premise, IPA has this similar aim, and in addition recognises the environment in which the individual is located (Quest, 2014), thus overcoming an earlier identified shortcoming of transcendental phenomenology.

There are key features to IPA studies that provide good alignment to the aims of my study. IPA is a methodology which calls for a detailed exploration of the lived experiences of the participants (Smith, 2004; Wagstaff et al, 2014), and the phenomenon should be one of importance to the participants. It is *idiographic*, maintaining a focus on the experience of an individual, as opposed to a nomothetic enquiry (which was the fundamental aim of Husserl) whereby data are analysed and presented in ways which categorise and generalise (Smith et al, 2009). IPA seeks to determine what is important to that individual, with detailed in-depth exploration of their experiences. Data remain clearly attributable to the individual, thus addressing the idiographic principle. Participants should have some degree of homogeneity in the shared experiences that are the focus of a study, but there is opportunity to identify where these experiences converge or diverge, thus uncovering a *range* of ways in which a phenomenon may be experienced by a distinct group of individuals. Too diverse a group could create too wide a divergence to be meaningful.

Smith et al (2009) explain how a person's understanding of the phenomenon may be implicit or hidden and require bringing to light. Tuffour (2017) identifies how this is not only dependent on the participant being able to articulate his/her experiences, but also for the researcher 'to 'dissect' such thoughts and feelings to give 'an authentic interpretation of their experience' (Tuffour, 2017 p.3). In IPA this is referred to as the *double hermeneutic*, as there are two stages to this process. Participants are seeking to make sense of their experience and in addition the researcher seeks to interpret their sense-making. A concern is that such interpretation can be influenced by the researcher's own biases, therefore, such accounts can only be interpretations, but with the aim to be faithful to the participants (Larkin, Watts and Clifton, 2006). However, self-

knowledge and critical reflection can guard against biases, real or potential, and Allen-Collinson (2009) suggests that a self-critical approach can support this process. That said, knowledge and understanding, from the researcher, can be positively used to bring relevance to the questions asked, and when seeking to derive meaning from the answers given. Therefore, the role of the researcher is to both demonstrate a degree of empathy, and an inquisitive approach, modifying to a degree Ricoeur's hermeneutics of empathy and hermeneutics of suspicion (Smith et al, 2009). On the one hand this is an appreciation of the participants' experiences, and a wish to see things from their perspective, and on the other to take a questioning approach to gain a deeper level of understanding.

The position of the researcher throughout the process is appreciated by Smith et al (2009). Both researcher and participant share a common humanity and may also share some experiences. As identified earlier, the participant is drawing on first-order meaning-making whilst that of the researcher is of the second order, the double hermeneutic (Smith and Osborn, 2008). As humans, we naturally look for order and connectivity in our world, which can lead us to jump to conclusions and be influenced by confirmation bias. Here I take note of Husserl's argument to consciously focus on the essence of an experience, and not be in haste to categorise it in relation to our own expectations and presumptions.

There is a definite challenge to undertaking research close to one's own experiences. Kanuha (2000) describes this background knowledge as being an asset and a liability, which has the potential to aid interpretation but can also overlay or obscure the voices of the participants. Researchers may not be aware of their biases (Mauthner and Doucet, 2003), and Smith et al (2009) explain how such realisation may only become apparent during the research process. Hopkins et al (2017) write of developing a phenomenological attitude along the 'reduction and reflexivity' continuum. To use one's previous knowledge and experience in a transparent way calls for reflexivity, and Finlay (2008) appreciates the difficulty in dis-integrating our own pre-conceptions from the openness required to appreciate anew the range of experiences - as revealed by participants - and describes this continued movement between these positions as a dance, to be enacted throughout all stages of a study.

I have no specific preconceptions of how clinicians *should* view and embrace workplace learning, or rather my previous clinical and practice educator roles gave me

a wide understanding of individual needs and preferences for ways of learning. I have actively used my understanding of the theory and practice of this phenomenon to design a study to explore potential diversity of participant experiences in this context of paediatric critical care.

Hefferon and Gil-Rodriguez (2011) refer to IPA as an increasingly popular methodology, with the subsequent risk of its being chosen without due regard to its foundations, and before a question is formulated. They indicate the need to first identify a research question, and only then determine the methodology most suited to answering it. I came to IPA as part of this research journey, and as I learned the detail of its aims and principles it felt to be an excellent alignment with my research question and research objectives, and able to positively utilise my previous experience.

IPA is not without its critics, as well as those who identify its contribution to methodological choice. Shinebourne (2011) explains how (to its seeming advantage) novice researchers can utilise it as a methodology without a deep understanding of the theoretical foundations, but that this is a missed opportunity, and runs the risk of a study losing potential complexity. Giorgi (2010, and 2011) and Smith (2010) have had open and robust debate, with Giorgi arguing that IPA does not meet scientific criteria and lacks a series of rules to support the research processes. I contend that both sides are arguing from different perspectives – those of positivist (Giorgi) and post-positivist (Smith). I would agree with Giorgi (2010) that IPA does not have prescriptive rules, but, as Smith (2010) argues, it does have underlying principles.

Workplace learning is a subjective experience. A strength of IPA includes the idiographic stance, which can reveal the variety as well as the convergence of what is important to participants. Its utility has the potential to identify the different ways of ‘being’ an expert clinician who maintains expertise using the workplace as a source of continued learning. Arguably these clinicians are not in need of a voice per se, but such experiences may not necessarily be uppermost since clinical practice and outcomes are more readily recognisable than workplace learning.

4.5 Summary of methodological decision-making.

Informal workplace learning as experienced by expert clinicians, is complex, both from the perspective of the interplay between PICU staff and the everyday clinical environment. This study values individual experiences and also recognises the influence of context – social and historical – on experience. Here I have made a clear argument for

others to follow, and a rationale for using IPA as a research methodology. The following chapter sets out its practical application.

Chapter 5: Methods

This chapter focusses on the practical application of the philosophical foundations of IPA, and the ethical considerations which underpin this study. The processes by which potential research participants were identified and invited to take part are made clear, as is determining the content and conduct of the semi-structured interviews. In applying IPA methodology, the analysis of the raw data follows a set of stages – principles to be followed rather than one specific technique (Smith et al, 2009). For a novice IPA researcher, this felt supportive not restrictive. These steps, and how they were applied are detailed in the final part of this chapter. As identified in chapter 3, the lines of enquiry were distilled from questions identified by Eraut (2004) and Engeström (2010) as being fundamental to workplace learning studies, namely:

- Who are the learners?
- Where are they situated?
- What do they learn?
- What are the processes of learning?
- Who or what influences the direction of their learning?
- Who or what supports their learning?

After Eraut (2004) and Engeström (2010)

Who are the learners?

The learners identified within the Research Question were clinicians – professional healthcare workers - illustrative of the MPT, hence the need to define the concept of *professional practice*. Their level of practice is that of *an expert* which required further critical analysis as a concept. Learners within the literature review were situated within clinical practice.

Where are they situated?

The context of this study was within the clinical setting, further defined as the PICU. The papers identified and contributing to the concept analysis and the literature review gave focus to both the generic workplace and more specific contexts.

What do they learn?

This was explored in part within the concept of *professional practice* – what it is that clinicians need to know and do, and how they behave, the values they hold, and the

attitudes they exhibit. The extent of this learning – the depth and breadth – was further critiqued within the concept analysis ‘an expert’. In addition, specific papers within the literature review also identified learning outcomes resultant from workplace learning.

What are the processes of learning? Who or what supports their learning?

This was the purpose of the continuum of learning theories, identified in part with the literature review, chapter 2, and expounded and justified in section 3.3, identifying who and what clinicians engage with in the clinical workplace (potential and actual), which facilitate learning. Included here were features of the learning environment – physical, social, cultural.

Who or what influences the direction of their learning?

Again, this was explored in relation to learning theory (including such facets as motivation, self-direction, and learner identity) in section 3.3 and within the literature review.

5.1 The research design

A phenomenological research design was deemed to be the most appropriate choice given the focus of the research question. IPA, as reasoned in chapter 4, aligned to the philosophical underpinnings of the study, since I could utilise my previous experience and current knowledge and understanding to interpret the experiences of the clinicians with authenticity and transparency.

5.1.1 Ethics approval processes

Since the research participants were NHS Trust employees, ethics approval was required, in conjunction with Edge Hill University’s ethics format. The local Research and Development (R&D) Department confirmed that the project did not require approval through the NHS Ethics Board, but required local R&D scrutiny. Approval was gained from the Faculty of Health and Social Care Research Ethics Committee, in December 2013. The proposal then gained ethics approval from the relevant personnel at the NHS Foundation Trust, at the time National Research Ethics Service (NRES), now the Health Research Authority (HRA).

5.1.2 Participant selection and recruitment

The potential participants were all senior clinicians, working in a regional PICU. From within the wider paediatric intensive care team, the Band 6 & 7 nursing staff, the

medical consultants, the Nurse Consultant and Advanced Nurse Practitioners, and the physiotherapists and pharmacists with a specific role in paediatric critical care were invited to take part in this study. These groups of staff have objectively-recognised expertise (by way of their roles and qualification) and socially recognised (by their status) are thus defined (at least for the purposes of this study) as being the experts in their field, within this multi-professional clinical team.

Defining those who were to be invited was the purposive element of this research process. Smith et al (2009) suggest that IPA researchers should identify a broadly homogeneous sample of participants who have a shared understanding of the research focus. Arguably, the identifiable participants did share commonality – they were clinicians working in a specific PICU, members of the MPT, and with access to this environment as a means of supporting continued learning. A degree of heterogeneity was evidenced by their belonging to different professional disciplines. However, gaining this range of perspectives from within the multi-professional team was a fundamental intention, since this is an under-researched group with respect to WIL, as identified from the literature review.

The potential participants numbered 70, as shown in the table below.

	Potential participants	Indicated initial interest	Interviewed
Consultants	11	5	3
ANPs	6	6	2
Band 7 nurses	11	4	3
Band 6 nurses	38	7	1
Specialist MPT*	6	4	1
TOTAL	72	26	10

*physiotherapists and pharmacists

Table 5.1: Potential and actual research participants

The potential participants were emailed with an introductory letter, and a Participant Information Sheet (see Appendices I and II), inviting them to take part in the study. The wording of these documents was specifically designed to share the aims and purpose of the study, and to emphasise the value and importance that would be placed on their personal experiences. Of the potential 70 eligible participants, 26 initially

indicated their interest. They were invited by email to indicate when would be a suitable date and venue. My aim was to have around 10 participants, which Smith et al (2009) suggest as being a manageable number for the novice IPA researcher, permitting depth of individual data and detailed analysis. A parallel aim was that the ten participants would include doctors, nurses, advanced nurse practitioners, and the allied health professionals.

Of these 26, ten responded, and were sent the broad interview questions and consent details (see Appendix III). They identified a convenient date, at a venue of their choice, and thus formed the group of research participants. The 16 who having earlier expressed this interest were emailed again and did not follow up the invitation. Reasons for this were not given nor were asked for.

Pseudonym	Profession	Length of time in this PICU
Abigail	ANP	10-15 years
Angela	ANP	15-20 years
David	Doctor	> 20 years
Debs	Doctor	5-10 years
Dominic	Doctor	15-20 years
Nancy	Band 7 nurse	>20 years
Natasha	Band 7 nurse	>20 years
Nell	Band 6 nurse	>20 years
Nicole	Band 7 nurse	15-20 years
Pippa	Pharmacist	>20 years

Table 5.2: Demographics of participants

The demographics of the individual participants are illustrated in Table 5.2 as shown above. The group of ten was illustrative, from the perspective of the professional groups, of the potential participants. Smith et al (2009) explain how participants should be chosen for their ability to give a certain perspective – representative of this perspective rather than representative of a population. Interviewing around ten participants had been the intention - had more wished to take part, I would have identified participants who comprised the range of clinicians within the MPT, to ensure that the project remained feasible to complete within the timescale. Had fewer participants volunteered, then had they remained illustrative of the MPT, and numbered between 6-10 that could have been accommodated, still following the aims and

objectives of the research design. Fewer than six, or non-illustrative, then I would have repeated the invitation to participate. When using IPA methodology, Smith et al (2009) explain how IPA studies are usually undertaken with relatively small numbers of participants, (less than ten for novice researchers is the suggestion) due to the need for detailed analysis of the data. It was disappointing not to have a physiotherapist take part in the study, however, a pharmacist from within the MPT took part and was illustrative of the allied health professionals within the team.

5.1.3 The content and conduct of the semi-structured interviews

Interview dates were arranged, at locations chosen for convenience by the participants, and all were face-to-face. Six of the interviews were conducted in workplace offices, three in neutral venues, and one in a University office. The interviews lasted between 20 and 88 minutes. The time-frame from recruitment to the final interview was 12 months, with interviews taking place between August 2014 and July 2015.

The focus and content of the semi-structured interviews was informed by the themes critically appraised consequential to the Literature Review, Chapter 2, and the concepts and theories explored in Chapter 3. The fundamental questions used to explore workplace learning include identifying and defining the learners and their location, the content and processes of learning, the motivation and depth of learning, and the barriers and supporters of learning. The interview questions may be found in Appendix IV and Appendix V. The former contains the potential questions sent to participants. The latter includes potential prompts to probe further.

In preparation, I had informal conversations with clinicians and educationalists regarding the focus of my study, in order that I might maximise the opportunity for participants to speak of their experiences in a meaningful way. This helped to inform the structure of a pilot interview with an ex-colleague from clinical practice, not eligible to take part in the study, but with a similar level of clinical experience and expertise as the participants. It was a useful exercise which established that the lead-in questions were too focused on learning, for example 'how do you like to learn?' which was too directive, and outside of the norm of usual clinical discourse. I reconsidered and rephrased my questions, asking more general questions related to practice before moving on to more specific areas of discussion.

Eraut (2004) identifies the difficulties which may be encountered when seeking to uncover the (often invisible) learning that is integrated with work activities. He recommends speaking with study participants about their work in general, in order to initiate conversations about practice and learning. This approach proved to be more fruitful – asking straightforward demographic questions, and questions regarding clinical developments enabled the discussion to flow. From this I realised that although I had maintained links to this clinical area and had a considerable understanding of this clinical workplace, I had also almost unconsciously developed a changing use of language when discussing learning with academic colleagues.

Regarding the status and characteristics of the participants, Rubin and Rubin (2012) suggest that ‘technical experts’ have access to specialist knowledge, and the study interview should be planned with this in mind. Experts are likely to enjoy talking of their subject and be engaged and more willing to share experience if the interviewer is au fait with the language and level of their area of expertise (Rubin and Rubin, 2012). I was able to use my previous experience and perspective towards the avoidance of such potential difficulties.

During the pilot interview, I also had a concern verified – that ‘experts’ may be uncomfortable with revealing and speaking of their need for continued learning, as noted by Solomon et al (2001). I kept this in mind during the interviews, although in fact this did not appear to be a concern for the participants. However, it may have been of significance to those who chose not to participate.

The pilot interview thus helped to clarify the wording and ordering of the questions, and gave reassurance that I was not missing any pertinent areas of enquiry. The questions were designed to be open-ended, and non-directive, enabling participants to elaborate on their experiences (Willig, 2008). Shinebourne and Smith’s account of how they developed their interview schedule (cited by Smith et al, 2009), was helpful, particularly in the light of my experience of the pilot interview. They suggest that researchers identify *interview questions* which will enable the participants to answer the *research question*. It is also important to think of the sequencing of the questions, with respect to a logical progression, but also taking account of any sensitive questions, which should appear later – a term they refer to as ‘funnelling’. This was useful advice – I began the schedule asking biographical details, which I hoped would be non-threatening. Not only did these questions clarify practical information, they also

seemed to put participants at ease. Such questions also generated data which emphasised the importance they placed on their clinical careers, and how this had motivated their learning. Had the first interview identified any concerns regarding its content or structure, I would have reconsidered the format. This follows the principles of IPA, in that the interviews are an iterative process with a schedule that can evolve and be informed by previous interviews (Smith et al, 2009).

5.2 Data collection

Prior to the start of the interviews, participants were thanked for volunteering, and reminded of the aims of the study, as outlined in the invitation. Written consent was taken at this point. As mentioned earlier, each participant had received a copy of the broad areas for discussion prior to their interview (see Appendix IV), as I wished to be open and transparent regarding its focus and give participants the opportunity to think about what they would like to speak of. This included 'anything else you would like to add'. I had identified additional questions to prompt participants, should they prove necessary for greater depth and/or clarification (see Appendix V), but chose not to send this to the participants. I did not wish to pre-empt or direct their responses, and wanted to ensure they were free to share experiences which were most important to them. The interview design gave the participants opportunities to speak of their experiences whilst ensuring that the interviews remained focused, moving from the general to the more specific (Savin-Baden and Major, 2013). Smith et al (2009) write of the interview as being a purposeful and flowing conversation, which I felt was achieved. The interviews were audio-recorded and transcribed verbatim.

In clinical practice, I frequently 'translated' or re-worded my clinical knowledge when I was teaching (formally or informally), such that more junior staff and students, and indeed the parents of the children in our care, could gain an understanding in terms that they could understand. I had a similar task when designing this study, particularly here when identifying the wording of the interview questions, and during the interview process itself. This was highly relevant, in that if workplace learning tends to be implicit (rather than explicit) in their daily actions, then clinicians may not readily be able to describe this concept or use the language of learning theory to do so. This supports the decision to use an interpretative methodology.

5.3 Ethical processes

The ethical issues impacting on study design is a process which should be integrated in all aspects of the study. This can influence the research question, the design planning, consideration for the individuals taking part in the research and the way in which claims to knowledge are made. This section indicates how these aims are undertaken in practice.

There may be difficulties of determining rules to be followed in all situations, but principles such as treating the participants who take part with dignity and confidentiality, and determining and presenting the findings from the research data in a trust-worthy manner, form the backbone of ethical considerations (Pring, 2000). Since the research participants were ex-colleagues, this gave me insight into the complexity surrounding learning in clinical practice, but also brought additional ethical issues, not least because I had previously worked alongside potential participants. I consider that I have had (and continue to have) a professional relationship with these colleagues. I made a conscious decision to site my study in this clinical setting, since this previous experience can confer advantages in my understanding of the factors which impact on learning. Nevertheless, I needed to appreciate and address potential ethical issues objectively and transparently. A professional framework gave structure to this process.

5.3.1 Use of an ethical framework

The participants in this study were NHS staff, and the focus was to investigate their experiences of workplace learning. The British Educational Research Association (BERA) has Ethical Guidelines for those undertaking educational research (BERA, 2011), and although formal learning is not the focus of this study, the principles of the framework were deemed to be applicable. The broad focus is towards the ethic of respect for the persons; claims for knowledge; democratic values; the quality of education research and academic freedom. The researcher should evidence this in respect of their responsibility towards the participants, the researcher's sponsors and finally Educational Professionals, Policy Makers and the General Public.

Application of this framework has indicated respect of participants regarding all elements of their status. Voluntary informed consent was a prerequisite to participation, inclusive of clear information on the purpose of the research and how data would be used and reported. Deception or subterfuge was clearly not part of the research design, but I nevertheless needed to ensure openness in my approach. Participants have had

the right to withdraw at any stage of the research, and although discussion could have taken place to determine reasons or concerns, and give reassurance, they would not have been coerced into re-engagement.

The interview process was designed to limit the impact to the participants who already have a clinical workload, in that they were asked to choose time and location at their convenience. Incentives were not given, other than professional ones mentioned specifically in the letter of invite, by which I aimed to encourage voluntary and informed participation.

Research design should aim to minimise any detrimental effect to taking part in a study. Experiment was certainly not part of the design, but merely taking part in the study could have drawn attention to issues not previously considered. Throughout the processes I was not aware of any discomfort arising from the interviews. Had this occurred I would have suggested identifying support from the managerial or educational structures within the Trust.

Data obtained was subject to the Data Protection Acts of 1998 and the amendments made in 2003 (The National Archive, 2018). As such, participants were party to how and why data was stored, and be able to access to their personal data should they request it. The original design had been for participants to be contacted post-interview to have a further follow-up discussion to clarify the content and to give the opportunity to add detail to the data. In the event, three of the participants declined follow-up, and arranging further contact proved problematic. The participants were sent copies of their transcript, and interview recordings and transcriptions were kept securely, either password protected if electronic, or locked if hard copy.

Regarding issues of privacy, confidentiality was assured throughout. Anonymity was less straightforward, as there were potential issues of identification should participants belong to minority professional groupings. I have taken care to avoid this in the reporting and analysis of the data. Since there was only one pharmacist, I was keen to limit identification, but also wished to share with her my concerns. I emailed her to explain the situation and also attached a copy of the recording and a copy of her transcript, which highlighted the quotes I had used for the findings. I asked for her additional consent, which she duly gave. For all participants, any identifiable information was removed from interview transcripts, and only members of the supervisory team have had access to information.

The exception to the maintenance of confidentiality would have been solely if unsafe practice was highlighted during interviews. This was made clear to the participants as contained within the Participant Information Sheet (see Appendix II), and re-iterated prior to the interview. If this had occurred the participant would have been informed, and a conversation would have been held with the manager of the participant's practice area. Any action resulting from this would then be the result of Trust procedures and would sit outside the remit of this study. This approach to confidentiality is the norm within clinical and education research, and was familiar to participants.

Responsibility to the wider educational research community was also part of the BERA (2011) ethical guidelines. For this study, I would also include the wider clinical education community. I recognised and complied with the need to desist from falsifying evidence, sensationalising or distorting findings and was mindful of unprofessional criticism of fellow researchers. Critique and constructive criticism are relevant, and were undertaken in a professional manner. Additionally, data remain available for scrutiny, subject to the confidentiality and anonymity of participants.

5.3.2 Ethical issues specific to this study

Having a pre-existing connection with participants brings specific ethical considerations. McDermid et al (2014), in a review of the impact of such relationships, identify that a current or previous relationship may engender 'familiarity, respect and rapport' (McDermid et al, 2014 p.29). It may also be influenced by power relations, with the researchers in quest of knowledge or understanding, and the participants as holders of such data. Alternatively, the researcher has control over what and how the data is made visible. Holding the ethical principles of beneficence and justice have supported decisions made within the research design and processes. There was no coercion regarding voluntary recruitment, and information was aimed to be clear and transparent, with regard to the purpose of the study.

Appreciating and demonstrating reflexivity can minimise negative effects. Some of the concerns identified in this review are more relevant when the researcher and participants are working within the same organisation, though this does not completely remove their relevance in my study. Reflexivity is an underlying theme throughout, and explicitly evidenced at key points of the thesis, and explored in detail in chapter 8.

5.4 Data Analysis

To reiterate from the arguments presented in Chapter 4, principles of data analysis in IPA methodology value individual experience, with the aim of identifying a range of experiences, commonalities and possible outliers, whilst ensuring data remains attributable to each participant – the idiographic element of IPA (Smith et al, (2009).

Creswell (2012) writes of a data analysis spiral, whereby analysis is not a linear progression, but one which moves from data collection through to an account of the research findings, by means of procedures (in this case hearing and closely listening to the data, interpreting and making connections) and identifying examples to illustrate. Smith and Osborn (2003) propose immersion in the data in order to understand complexity, not necessarily frequency of such data. Listening to, and transcribing the interview are important elements of this analysis, providing ‘sustained engagement ... and process of interpretation.’ (Smith and Osborn, 2003 p.66). Throughout data analysis I moved between an insider (emic) perspective and an interpretive (etic) stance (Reid et al, 2005).

Steps to follow in IPA data analysis are helpful and give guidance without being confining or restrictive, providing structure and ways of working for the researcher – a heuristic framework (Smith et al, 2009). This methodology is not a tick box exercise of things to do but a principled way of addressing and answering the research questions, in an iterative process. This sequence is illustrated in the table 5.3.

5.4.1 Step 1 - Reading and re-reading

The interview recordings were transcribed and saved as word documents. Step 1 involved reading and re-reading the transcript, and making notes, which, suggests Willig (2008) be largely unfocused and a way of noting initial thoughts. In addition, as suggested by Smith et al (2009), I also re-listened to the original recording as I made my notes. As I heard the voices of the participants as I was reading the transcript, this took me back to the interview itself, and emphasised their tone of voice, which helped identify areas of importance to the participant. I also referred back to the notes I had made in a reflective diary, both before and after each interview.

	Aims	Rationale
Step 1	Reading and re-reading	Individual participants are the focus. Take time to listen, read the transcript and actively engage with the content.
Step 2	Initial noting	Detailed examination of content and language used. Pre-requisite for the following stage.
Step 3	Developing emergent themes	Themes develop from step 2 data, via researcher's interpretative analysis .
Step 4	Searching for connections across emergent themes	Look for connections and clusters of related themes; relationships and possible hierarchies .
Step 5	Moving to the next case	Return to steps 1-4, maintaining the importance of each individual case on their own merits.
Step 6	Looking for patterns across cases	Identify connections across cases. Themes may demonstrate similarity or idiosyncrasy between participants – the range of their experiences .

Table 5.3: Sequencing in IPA data analysis adapted from Smith et al (2009)

5.4.2 Step 2 - Initial noting

The transcripts were printed in landscape format, with wide margins to facilitate note-making. I had initially considered using computer software to manage data analysis, but I found the physical act of writing notes on a hard copy of the transcript was productive, so continued with this method. The practical suggestion to utilise the wide margins for exploratory comments to the right of the transcript, and emergent themes to the left was similarly helpful, giving structure to the initial note-making (Smith et al, 2009).

Important elements from each participant were highlighted and explored using an inductive approach. Each participant was interpreting the interview questions, and ascribing meaning in their replies. My role was to then interpret and attach meaning to these responses – the double hermeneutic. A particular challenge was to determine what was relevant, not only to the participant, but to the research question. Willig (2008) explains that themes may need to be excluded either due to lack of

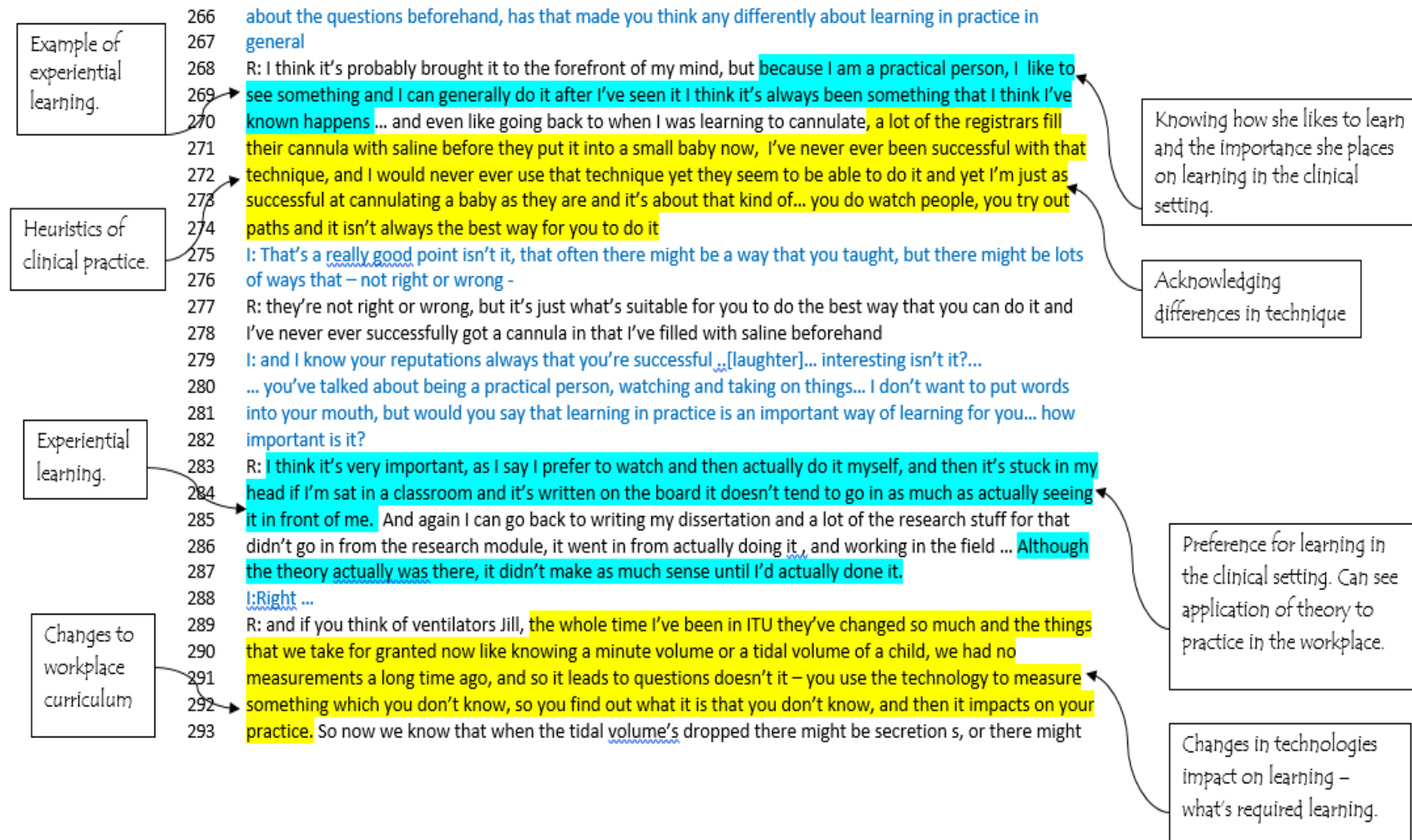
representation, or if they bore little or no relevance to the phenomenon. This occurred chiefly if the content related to unrelated clinical issues - albeit important to the participant, but outside of the focus of this study. I initially erred on the side of caution, so as not to overlook the potential of the data, and to limit subjectivity on my part. Figure 5.1 (on the following page, p.127) is an example of this.

I sought to identify who or what the participants were engaging with as they spoke of their experiences of WIL, in addition to the depth of their engagement. The language used was of relevance, particularly by way of emphasis or repetition. An additional point was that the participants were immersed in the language of clinical practice, though some referred to general learning theory. Therefore, interpreting and attaching meaning from a learning perspective anchored experiences to the research question. I found it useful that I was sympathetic to, and understanding of the context, and had used it to probe further. For example, when Natasha and Dominic each referred to 'the team' I asked for clarification as to who exactly they meant, as they could have been referring to their professional discipline or the wider MPT. In addition, my understanding of the context also meant that I did not need to disrupt the flow of conversation to ask about clinical workplace short-hand e.g. the terms ECMO (Extra-corporeal Membrane Oxygenation) and HF (haemofiltration).

At this stage, I also put to one side what I understood of the individual, and the previous conversations and work experiences we might have had. Though writing of descriptive phenomenology, Willig (2008) reminds the researcher to put aside 'lay and everyday knowledge as well as expert knowledge and theories' (Willig, 2008 p.55). Although I would be using such knowledge later in the analysis, at this point it was appropriate to become immersed in the participant's 'voice' of their experience. Schmidt (2006) writes of the need to move from the understanding of the whole, to the understanding of its parts, in order to gain a greater understanding of the whole. This was certainly my experience.

I approached the transcripts and recordings with interest, placing the participants and their well-being at the forefront of the occasion. This was not as difficult as I had originally anticipated, since the content and focus of the interview, (WIL, and

Figure 5.1: Example of note-taking during IPA analysis



the experiences of the participants) were not the usual discourses of the workplace, so the interviews were thus a different line of communication from that shared in clinical practice. In addition, as each interview progressed, I found it easier to focus on what was being said, and the demeanour of the participant. This attitude also helped me to read their transcripts, and hear their voices with a fresh understanding, noting different aspects of their practice, and professional character.

A concern I had had prior to undertaking the interviews related to my previous knowledge of working with the participants. I was not sure how I would react to (or interpret) data which I felt to be at odds with what I remembered of their workplace persona. After reflecting on this, I felt that the role of researcher would be to interview, enter into discussion, and probe for detail or clarification. Passing judgment on authenticity would be outside my remit and role. In the event I found there to be no dissonance or reason for concern in this area.

5.4.3 Step 3 - Developing emergent themes

In the early stages of data analysis, I was so concerned with maintaining the centrality of the participants' experiences that I found the interpretative role a challenge. This is recognised by Larkin et al (2006), yet they emphasise that moving beyond description (first-order analysis) to interpretation and conceptualisation is an important requirement of IPA methodology. Their paper re-iterates the need for both participant and researcher to co-construct – they infer that the researcher brings a 'psychologically-informed description' (Larkin et al, 2006 p.104). In addition, they explain that this second-order interpretative analysis is informed by the researcher's knowledge and understanding of theory and culture. This enabled me to appreciate and see how I could (and should) apply my understanding of clinical workplace learning theory and perspectives - rather than, in the case of Larkin et al (2006), psychology - to my interpretative analysis. This analysis was demonstrative of the double hermeneutic – the researcher making sense of the participant's own sense-making.

5.4.4 Step 4 - Searching for connections across emergent themes

This phase focused more closely on the notes I had made, whether they were related to the comments or questions made in the right-hand margin, or the potential themes noted on the left. The suggestion from Smith et al (2009) is to identify emergent themes from the first interview, before moving on to the next. It is a suggestion, not a pre-requisite, and the

reality was that I moved iteratively between steps 4-6, seeking to deepen my analysis and understanding of each individual, whilst at the same time identifying the extent to which experiences could be understood as being variations on a theme. Willig (2008) notes that themes need to reflect the participants' responses and provide an authentic connection to their experiences. I could identify broad areas of importance (the child, the ways in which the participant spoke of themselves, their work and their colleagues), but at this point found it a challenge to move further, to identify how themes might be fruitfully connected. I overcame this by producing pen portraits of each participant; summarising the experiences most important to them 'reduced' their data, making comparisons and connections easier to uncover.

Emerging themes may be drawn together using abstraction, whereby connections and patterns between such themes are identified as representative of a subordinate or superordinate theme, or by subsumption, in which case an emergent theme draws together other related themes (Smith et al, 2009). Quotes from individual participants (named, and with the location of the quote noted, by line number) were grouped together to exemplify common emergent themes, which then became the two subordinate themes.

5.4.5 Step 5 - Moving to the next case

As indicated previously, although each case was considered before moving to the next, in chronological order, I returned to previous transcripts and the notes I had made, looking for additional depth of understanding and interpretation. The aim was not for the analysis to be influenced by other cases – in fact at times I had concerns that there seemed to be a reasonably high degree of congruence across the transcripts with respect to the broad themes identified – but to ensure that what was important to each individual was indeed captured in the interpretative analysis.

5.4.6 Step 6 - Looking for patterns across cases

To clarify the core of each individual interview, each transcript was condensed to the essence of their experience in a one-page summary, identifying the most important elements, as demonstrated by a combination of features, viz. relevance to the research question, the enthusiasm and emotion demonstrated in the language used, and the phrases or points repeated and emphasised by participants. These summarised cases underwent further scrutiny to identify patterns of concordance and/or dissonance between the participants.

Themes were written on post-it notes so they could be physically moved, looking for connections as a means of connecting super-ordinate and sub-ordinate themes, with a possible over-arching theme.

Having reached this point, the potential connections between the emergent themes became more evident, as did the ranges of ways in which they were identified and experienced by the participants. The fundamental concepts of IPA are that it is focused on individual experiences; that themes may be held in common but idiosyncratic (Smith et al, 2009). Table 5.4 illustrates this process.

Emergent themes	Sub-ordinate themes	Super-ordinate theme	Master theme
workplace learning per se	clinical practice (n=10)	The clinical workplace provides opportunities for continued learning	The needs of the child and family in PICU (n=10)
learning from patients and parents			
practice developments			
the physical environment			
learning and teaching in the workplace			
learning from the MPT	professional discourse (n=5)		
one-to-one conversations			
clinical meetings			
the ethos of discussion			
choosing a career in this specialism	identity as a clinician (n=7)	Self-identity as a motivator for learning	
clinical identity			
clinician as teacher and facilitator			
reflection and application of learning			
self-identification as 'expert'	identity as an expert (n=10)		
definitions of an 'expert'			
expertise as a journey			
influence of team culture on learning	identity as a member of the MPT (n=9)		
belonging to a team			
roles and responsibilities			
self-identification as a 'lifelong learner'	identity as a lifelong learner (n=7)		
recognition of learning opportunities			
commitment to learning			

Table 5.4: Emergent themes, sub-ordinate and super-ordinate themes, and master theme

5.5 Strategies for validation of findings

Determinants of qualitative research are different from those of quantitative research and Smith et al (2009) recommend criteria identified by Yardley (2000), in order to assess the validity of an IPA study. The principles she identifies are sensitivity to context; commitment and rigour; transparency and coherence; and impact and importance. This is explored in detail chapter 9. An additional strategy included an independent audit to ensure credibility (Smith et al, 2009 p.183), by way of verifying its systematic and transparent construction. A member of my supervisory team (CK) undertook this audit, and scrutinised two of the transcripts – those of Nancy and Dominic.

Referring back to the Table 5.4, a further measure of the importance of each theme, and in effect its validation was its prevalence across the participants. Smith at al (2009) suggest that with a cohort of ten, there should be extracts from at least half of the participants to represent each theme, which was achieved. Table 5.5 illustrates the total contributions to each theme, and the participants who contributed to each theme, which fulfils this criterion.

		Needs of the child	Clinical Workplace		Self-Identity				Total
			Clinical Practice	Professional discourses	Clinician	Expert	Lifelong Learner	Member of the MPT	
Participants	Abigail	II	III	III	IIII	II	II	III	18
	Angela	II	III I	III	I	III	I	I	17
	David	III	III	I	III	II	I	III	18
	Debs	II	III	II	III	II		I	11
	Dominic	I	I	IIII	III I	I	I	III	18
	Nancy	I	III IIII	I	III	III			19
	Natasha	I	III		I	III	I	III	14
	Nell	I	III		IIII	II	I	II	13
	Nicole	I	III II		I	IIII		I	14
	Pippa	III	III	III	IIII	II	I	II	20
	Total	17	45	14	34	24	8	21	162

Table 5.5: Numbers of participant quotes attributed to each theme.

5.6 Reflection and reflexivity

Notions of reflection and reflexivity have some similarity, and both are concepts important in qualitative research. Savin-Baden and Major (2013) write of reflection as looking back at an experience, and suggest the need to move beyond that level of introspection to reflexivity. They propose that reflexivity is an analytical process whereby the researcher engages with presuppositions and values, to determine their impact on the research design and interpretation of data.

Smith et al (2009) write of four layers of reflection in IPA:

1. *Pre-reflexive reflexivity* – minimal awareness
2. *The reflective ‘glancing at’ a pre-reflective experience* – intuitive undirected reflection
3. *Attentive reflection on the pre-reflective* - becoming aware of an experience and engaging with it.
4. *Deliberate controlled reflection* – referred to as ‘phenomenological reflection’. This is a deliberative engagement and analysis with events

These four ‘layers’ demonstrate depth of reflection rather than the either/or options of reflecting or not. In the early stages of the planning of this study, I was conscious of the issue of my previous connection with the context and the participants, and although more than minimally aware of this, did not progress beyond ‘undirected reflection’ and a realisation that I would have to address this more deeply. Identifying IPA as the most appropriate methodology moved such reflective thoughts to a much deeper level, as I recognised the need for an explicit reflexive engagement demonstrated in all stages of the study. Chapter 8 is an account of my reflexivity throughout the study.

In summary

This chapter makes clear how the principles of an IPA methodology have been applied to my study, and how the relevant ethical issues have been addressed. The practical stages from identification of participants and the interview processes, through to the steps involved in transforming the raw data into meaningful material that enables the research question to be answered are elucidated. The following chapter presents the findings from the data.

Part 4: Results from the data and their integration with relevant theories, concepts and previous studies

Chapter 6: Findings

The findings from the data analysis are presented in this chapter. One of the fundamental principles of IPA is that it is idiographic and focused on the particular. Data from the participants detail the phenomenon of WIL from their own experiences, whereby the data remains attributed individually to maintain this idiographic principle (Smith et al, 2009). The second key principle is that the participant interprets the question asked, through the light of their experience. In turn the researcher then interprets the participants' responses. These illustrative quotes provide a clear and transparent link between raw data and interpretative analysis.

The themes are introduced in turn, prior to their detailed analysis. The individual contributions of the participants are quoted verbatim from their transcripts such that their words are in the text, in italics, with a line number to indicate where this occurred. Words removed from their direct quote appear as ellipses (...) and words added to give additional context or understanding are in brackets [] like so. At the beginning of each theme, there are one or two key quotes from participants (in bold italic text) which are illustrative of the particular theme.

6.1 The participants

The pseudonyms for the participants have been chosen such that the nurses' names begin with N, the doctors with D, the Advanced Nurse Practitioners (ANPs) with A, and the pharmacist with P. The names were chosen to match the gender of the participants. They had worked on this Unit for between 6 and 29 years. Their roles are illustrative of the clinical disciplines within the multiprofessional team (MPT).

6.2 Introduction to the themes

Following the guidance of the IPA approach to data analysis (Smith et al, 2009) it became apparent that participants recognised that the needs of the child in critical care, and the support of his/her family as paramount. Unsurprisingly, they referred to this need as a

focus for continued learning. This was identified as the master theme, 'The needs of the child and family'.

A super-ordinate theme that emerged from this analysis related to the activities undertaken in everyday work practices on the Unit. This was divided into two sub-ordinate themes. First, was that of the learning opportunities which are experienced within everyday clinical work, and secondly were the learning opportunities afforded by way of professional discourse – the spoken interactions and conversations, formal and informal, held during everyday practice.

A second super-ordinate theme was that of self-identity – how participants identified and referred to themselves. This was an inherent consequence of some of the more direct, lead-in questions, such as biographical details and whether participants considered themselves experts. However, the extent to which this related to their experiences of WIL was evidenced in their more detailed responses to their experiences of learning opportunities within this clinical setting. This became a super-ordinate theme, further divided into the sub-ordinate themes of clinician, expert, multiprofessional team member and life-long learner. There was a strong sense of professionalism and commitment to continued learning, and the impetus to learn. Means to achieving this learning were expressed by participants, within each of these roles. The themes and their inter-relationships are illustrated in Fig 6.1 below.

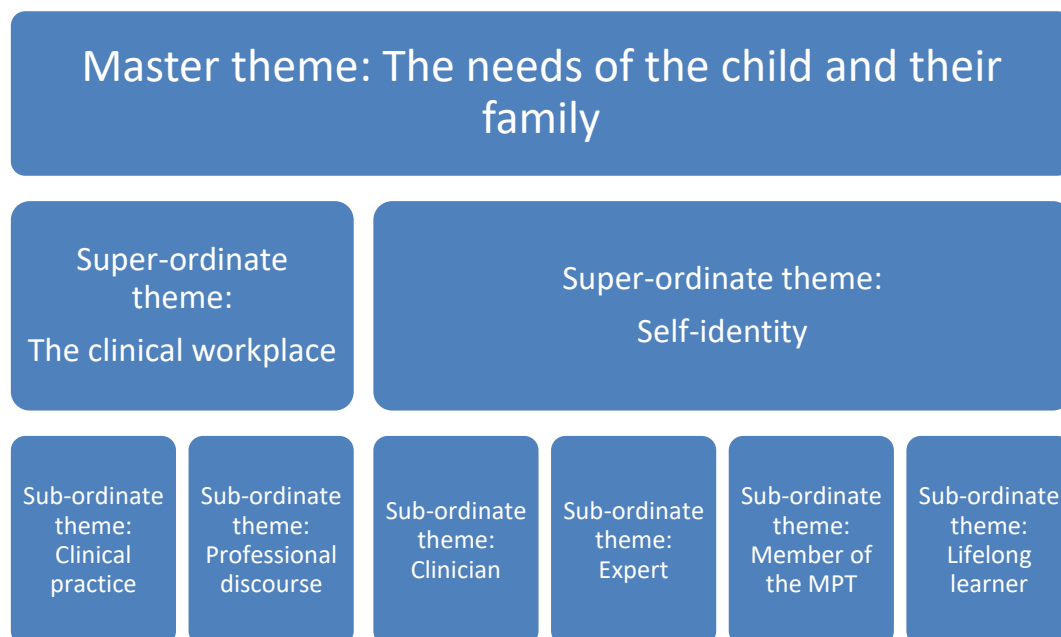


Figure 6.1: Master theme, Super-ordinate themes and Sub-ordinate themes

Not all participants contributed to every emerging or subordinate theme, but all were represented within the super-ordinate themes. This ethos, supported by IPA methodology, appreciates the importance of the participants' experiences whilst at the same time identifying the range of those experiences (Smith et al, 2009).

6.3 The needs of the child and their family – Master theme

[the children] are the lynchpin ... it's all about patient-centred care, isn't it? Pippa 63

The arena in which we work has changed, so the sort of children that come through are now sicker ... the selection of interventions has changed, and we do different things. David 100-103

The needs of each child – making a diagnosis, decisions regarding specific treatment and interventions, and the care and the co-ordinated management of that care, are the foundations and focus of clinical practice. Children and young people are intrinsically part of a family, so in addition, the support of parents and/or care-givers are also integral to clinical practice. Participants experience this as an indicator for *what* needs to be learnt – the emergent themes supporting the *Master theme: The needs of the child and their family* are detailed in Table 6.1.

Emergent themes	Master theme: The needs of the child and their family	
Patient-centred care	Pippa	<i>It's all about patient-centred care isn't it? ... each patient gave you opportunities 63</i>
	Nicole	<i>In PICU we're expected to do a bit of everything! 116</i>
Patient characteristics, unpredictability and complexity	Debs	<i>I read up about it and tried to find exactly what it [battery ingestion] does and what I need to do 73</i>
	Abigail	<i>I would think about why did it not go to plan? 97</i>
	Angela	<i>You can't expect that they're going to be text book 399</i>
	Nell	<i>We have children with complex needs 39</i>
	Natasha	<i>Huge changes I think – differences in the patients coming in 120</i>
	David	<i>The arena in which we work has changed ... I must be adopting a different position in the team 100&104</i>
Parental expectations	Dominic	<i>We have become I suppose less overtly paternalistic about dictating what to do, and more interactive with families 54</i>

Table 6.1: Emergent themes supporting the Master theme: The needs of the child and family

In the context of this environment, and in the management and practice of caring for these children, the senior medical staff – the consultants – have an active hands-on role within the team. There is consultant-led medical team, 24 hours a day, and for most of the time this means there is a consultant present on the Unit. For the nursing team, the needs of children mean that usually the nurse: patient ratio is 1:1. Occasionally, the child's acuity is such that two nurses are needed per patient. In practice, this means that at any time, day or night, each patient has a specific nurse managing their care. In addition, there will be a team leader to coordinate the patient through-put and manage and support the nursing team. This environment affords even the senior nursing staff opportunity to practice their clinical nursing skills on a regular basis by caring for a specific patient or supporting more junior members to do so. In addition, other members of the Multi-professional team (MPT) include specialist physiotherapists and pharmacists.

Patient-centred care

The care and management of these children is at the centre of clinical practice, the focus of learning. Pippa explains how this is evidenced in several ways – by the individual child, their original clinical diagnosis, and their changing needs.

*Yeah, I think actually they [patients] were probably the lynchpin ... it's all about patient-centred care isn't it? ... each patient gave you opportunities. Different problems some of them had before they came to ICU ... would influence things. And others then would develop organ failure and that would then mean you'd have to re-evaluate their drug therapy etc. and 'erm, and even just things like you know the family situation might then influence how you would talk to the parents ... Each child still presents different opportunities [so you] learn a different way of applying, you know, your knowledge to that patient and that situation. **Pippa 63-73***

Patient characteristics, unpredictability and complexity

Nicole, Debs, Angela and Abigail also acknowledge the impact that these children have on their learning, by the breadth as well as depth of knowledge required - the expansion their learning. For example, *In PICU we're expected to do a bit of everything!* **Nicole 116**. For Debs this is a catalyst for further reading and study.

*We had a patient the other day who had taken [a relatives' prescription medication]. I didn't know it was as deadly as it is ... so I read up about it and tried to find exactly what it does and what I need to do ... It's the more precise things I read up about. The other day we had a kid who had a battery ingestion for example and, apparently, there were three in the past 18 months in the region had died after battery ingestion, so I read up on that. **Debs 70-78***

In Angela's case the diversity of patient need can seem overwhelming.

You do spend a lot of time thinking 'I actually don't know anything at all' because of the mix of patients. Angela 56-57

Abigail reflects on situations that have not gone to plan in order to learn from them.

I would think about why did it not go to plan? ... Often there's elements of the child's clinical state that I didn't understand so I'd have to go away and read up about it and think ... if faced with this again what would I do differently? Abigail 97-99

The fact that these children are critically ill can be challenging to staff; these challenges are further compounded if the child has a number of clinical problems affecting their health and well-being. Both Angela and Abigail explain this here, and both use similar phraseology in recognition of the learning that is required beyond that available in any text book.

So, you can't expect that they're going to be text book, and so because they're unpredictable I don't think you can ever afford to be so self-confident that you don't question what you're thinking and why you're thinking that way. Angela 399-401

In Abigail's experience, she looks to synthesise her knowledge and understanding, and expand her learning with support from colleagues.

You'll get some very complex patients that have got multiple diagnoses with problems which may be overlapping, ... so those patients are really difficult to judge, ... you can't really learn that in a text book, ... and some of that learning has to be from clinical experts ... and you're trying to understand how the jigsaw all locks together ... so it is a lot of pattern recognition for the common stuff, but then the not so common stuff is a lot of head scratching and critical thinking and trying to understand what pieces fit where. Abigail 163-178

Looking in more detail, the common features of these patients, these children cared for on the Unit, are that they require such intensive levels of care. This includes support of failing organ systems, their medical management, and interventions from the wider MPT. The reason for their admissions, and their specific care, as has been recognised, is wide and varied. Debs identifies the content of learning in greater detail here.

Well I mean you have to learn all the PICU procedures, you have to learn about all the different patient groups, you have - I mean that's very different if you have a cardiac surgical patient for example, they are different from general patients, from surgical patients, from oncology patients, Debs 32-35

The human side of this technical practice is equally important – caring for the child as an individual, and supporting their parents and wider family throughout a difficult time. There

are challenges within clinical practice of identifying and learning what constitutes best practice, whilst acknowledging the flexibility required for care and management to be individualised. Complexity adds to the focus of learning in the workplace.

We have children with complex needs, and the expectation and needs of parents mean we adapt the care to what they expect. The parents want the child's usual care to continue, so we adapt accordingly with the parents ... Patients are more complex. Nell 39-40 & 42

A more specific example is managing sedation for an individual child – deep enough for them to be comfortable whilst aiming to minimise side effects and unwanted sequelae. Pippa, one of the Unit's pharmacists, explains the practicalities here.

I suppose sedation is one of the ones where each individual patient is so variable, ... we would involve the parents and other staff while you were trying to do the best for the patient. And then the next patient, I suppose, ... you would say 'Well let's try this as it worked with the previous one.' Pippa 92-99

This approach requires a team effort, and calls for continual learning, understanding and application, as research findings and drug regimens are developed and applied to practice.

Well, I think we did we did try and write flow charts [for withdrawal of sedation, and developed] a scoring system ... [so that subsequently staff] knew almost your thought processes today, and then the next. If you weren't there the next day they could say, 'Oh right they're trying to aim for this, therefore I'll learn, you know, from that. Pippa 107-110

Natasha describes in detail the many ways in which the patient group has changed, by way of their age range and their diagnoses.

Huge changes I think – differences in the patients coming in, they're a lot sicker and younger, and older. There's a lot more very [premature babies] up to 23 weeks [17 weeks premature] and older patients, up to 22 [years], which we didn't use to see, and leukaemia patients, [some young adults with certain types of leukaemia were found to have more improved outcomes if they were managed in Paediatric centres. If they require intensive care, then they are admitted to the Unit]. And also, sicker [children with congenital cardiac defects]. Different operations that probably wouldn't have gone ahead a few years ago, so improvements in cardiac and then, what was it? Parent's expectations – hugely changed. It's more demanding... so I think there's a big change in attitude from the parents ... appreciating what we do too ... expecting us to do stuff rather than hoping – do you see what I mean? Natasha 120-127

This detailed account is similarly echoed by David, with respect to the specific management of these patients.

The arena in which we work has changed, so the sort of children that come through are now sicker, um and also we do other things so that when I first started we didn't really oscillate, and now we do ECMO, [Extra-Corporeal Membrane Oxygenation - a means of supporting heart and lung function], so the selection of interventions has changed and we do different things.

David 100-103

'Oscillation' that he mentions (also referred to as High-frequency Oscillation Ventilation) is a particular mode of providing ventilatory support. It required all in the MPT to learn the theoretical underpinnings of such an intervention, and how it applied to their specific role in caring for children needing this support. He also recognises his changing place within the team structure, which has changed the dynamics of the ways in which he works.

I suppose the other idea also is that I must be adopting a different position in the team, so I should change my role as I move from being young gun to being senior consultant ... so there's lots of ways in which things have changed ... and I also think that I've actually learned more from experience as I've gone through, so I approach things in different ways ... so yeah lots of things have changed. **David 104-108**

David also explains a specific challenge of paediatric critical care – in that there is a less formal evidence base with which to guide practice.

Paediatric Intensive Care particularly is such a tiny part of medicine ... So much of adult medicine is formed of rules and guidance, but because paediatrics is smaller, and PIC is much smaller so there's no formal guidance and practice has evolved [to] what seems a reasonable thing to do because we don't have the evidence out there. So, having read things and having thought about things, it's a mixture of clinical experience and basic science and extrapolating from what you know, and imagining things. **David 46-52**

Parental expectations

It is not only developments and evolution of clinical practice that has impacted on the focus of workplace learning. Practice does not occur in a vacuum, and changes in outside culture can affect the internal environment of the Unit. This is demonstrated in parental expectations, as touched on by Natasha earlier. Dominic describes his changing relationships with parents here.

We have become I suppose less overtly paternalistic about dictating what to do, and more interactive with families. We [have learnt to interact with parents differently] there's no question ... I have to be honest and say that it's not that often that the families would be challenging decisions about treatments, and what have you. They'll ask questions about it and you'd have to be able to answer them and justify what you're doing, and there's some families you can have pretty open discussions with, and with other families you have to be more direct in the information you're giving them. Get the parlance right and you can be interactive with the families, and have discussions with the families. **Dominic 54-55 & 44-49**

Thus, the focus of learning includes not only the knowledge and skills required of a clinical role, but also the requisite attitudes and behaviours, influenced both inside and outside of the clinical setting.

In summary

The focus of informal learning within the workplace in this setting is dynamic; it is subject to change and development over time. Participants identify this as being influenced by the breadth and depth of patient need; of the need to keep pace with new knowledge and research; of changing patient characteristics and parental expectations. All these factors evidence development and diversity. The experiences of the participants demonstrate that what they need to know, their skills, both as individuals, and representative of their profession, and the ways in which they work together, develop over time and in response to the needs of the children requiring the care of the PICU team.

All participants contributed to identifying the range of ways in which informal workplace learning is experienced and utilised. David recognised the need to integrate new knowledge and research, and together with Nell and Natasha, identified the learning required as the result of changing patient characteristics. Learning to accommodate changing parental expectations is identified by Pippa, Natasha, Dominic, and learning how to manage the complexity of the patient group is acknowledged by Pippa, Debs, Angela, Abigail, and Nancy.

6.4 The clinical workplace - Super-ordinate theme

'Daily practice, right? Every time you assess a child it just adds to your skill ... practise, practise, practise, practise, practise! Angela 273-274 & 293

The practicalities of the work, and the physical setting in which this occurs influences the opportunities for new and continued learning. Nicole and Abigail and Debs highlight the characteristics of this specific workplace as positive experiences, and motivators for learning. The emergent themes supporting the *Super-ordinate theme: The clinical workplace* are shown in Table 6.2.

Learning and the workplace

Nicole identifies the particular benefits of learning in the clinical workplace, acknowledging the underpinning theory required but identifying her preference for learning by doing.

The learning on the job has been extremely important to me – it's the way I like to learn ... as I said before I know there's a place for learning in the classroom and the theory behind it I do know that, the things I remember most are the things I actually do so I learn by doing rather than reading. Nicole 332-334

Emergent themes	Super-ordinate theme: The clinical workplace	
Learning and the workplace	Abigail	<i>Learning in practice is the most valuable thing</i>
	Angela	<i>Every time you assess a child it just adds to your skill. practise, practise, practise, practise 293</i>
	Debs	<i>I like the variety 15</i>
The physical environment	Dominic	<i>There's really no place to hide 102</i>
	Abigail	<i>You see people ... and you think 'Gosh, I wish I could be more like that' 117</i>
	Natasha	<i>The role models that I see do it unwittingly 165</i>
	Nicole	<i>It's easier here to watch what someone's doing 243</i>
	Nancy	<i>I think you do learn by watching 139</i>
	Pippa	<i>So, I suppose unconsciously, ... I'm actually listening ... to positive ways of communicating 184</i>

Table 6.2: Emergent themes supporting the Super-ordinate theme: The clinical workplace

Abigail finds the activity drives her continued learning, and developments around the technological support to clinical practices.

I like the hustle and bustle, that it's busy, there's always things to learn, ... you never get so comfortable that you think you know it all, because technology is advancing, [and] what we know about diseases. Abigail 15-17

For Debs these features have been the reason for her career choice.

When I was cardiac SHO [Surgical House Office], we looked after the ICU patients and I thought they were very interesting ... I like the variety ... and that after nearly 20 years having some sort of exposure to ICU! Debs 7 & 15-16

Dominic and Angela are very clear of the need to continue to learn in practice.

I think it comes with the turf, I think it comes with the turf. ... I think it would be difficult, if we slack off, we kind of lose one's skills, it becomes blindingly obvious when people are not up to scratch it always has been, it always has been. Dominic 141-143

And then the other things of course daily practice, right? Every time you assess a child it just adds to your skill. practise, practise, practise, practise, practise. Angela 273-274 & 293

This clinical environment not only demands learning but gives opportunities to refine practice supported by the ethos of those who work there. As well as the social and cultural influences on learning, there are more practical ones such as the physicality of the workspace.

The physical environment

The structure of the workplace environment means that clinical practices and application of knowledge is open to scrutiny. There are some individual cubicles for children with infections and for those children who are immuno-compromised, but many of the available bed-spaces are in open areas, such that practice is observable by others. In addition to this physical environment, the senior clinicians are a notable physical presence in the workplace.

There's really no place to hide. There's teaching and interaction, because there isn't any place to hide you know? And there are always these discussions about what one is doing. I think the environment has been beneficial in that we don't work in isolation. **Dominic 102-104 & 72-73**

This also promotes the use of role-modelling for learning, identified here by Abigail. This is not necessarily limited to individuals but becomes the culture of the workplace.

I think that the culture of an organisation is very important because you actually can even see people trying to model themselves, ... people who are transformational in how they behave and how they try to move things along and you see people who can perform like that and you think 'Gosh, I wish I could be more like that', and I think some of the wanting to be better is probably personality driven and I think some of it is probably culture – I do think culture's got a lot to do with it. **Abigail 113-118**

From Natasha's perspective, she sees it as a largely implicit activity.

The role models that I see do it unwittingly – I don't think they set out to be deliberately good role models, they just are. And I don't even think that they know they are. Others just do it as their bread and butter. **Natasha 165-166**

Nicole identifies the potential benefits and also cautions against the possibilities of mimicking poor practice.

I think in this kind of environment where you've got so much one-to-one nursing, ... [it's] easier on here to watch what someone's doing in the next bed space and it's a good thing. But it's also a bad thing because it's easier to pick up bad practices that way, you know if you're watching someone [undertaking a practical skill] and they're not doing a great technique. **Nicole 243-253**

Nicole is particularly concerned when unacceptable behaviour is evidenced by senior staff, and the somewhat inherent challenge of teaching and encouraging non-technical skills such as professionalism.

If you've got someone senior out there that is behaving unprofessionally, it's just giving everyone else a license to behave that way. You need to make them the minority and the people behaving appropriately the majority ... There's so many things around behaviours that are hard to teach ... it's something people don't always take into account, human factor, whether it's in risk or behaviours... how you learn, how you teach, everything, it's all comes within that doesn't it? **Nicole 391-403**

However, there is the potential to learn good practice from watching and listening to those from other professional disciplines in the MPT, with Nancy and Natasha identifying the specific benefits they experience. In this example, Nancy explains how she is there for support when medical staff interview parents, but that she also learns from this situation.

I think you do learn by watching, ... when you're sitting with a medical person giving consent or explaining results or whatever, you probably learn a little bit more from them. ... It's mainly medical staff who deliver really difficult information and you're always there to support them and witness what they say, but also to support the parents. That's a learning opportunity. **Nancy 139-144**

Here the use of role-modelling is illustrated with respect to developing and enhancing specific skills, such as communicating with the parents of critically ill children, as Pippa reflects on here.

You probably do listen ... the nurses are the main ones who talk to the parents, so I suppose unconsciously, ... I'm actually listening 'Oh that's a good way to talk to the parents.' ... listening to positive ways of communicating ... And [sometimes] ... you think awful, awful! You know sometimes you're cringing and sometimes you're 'Ah that's so lovely,' you know, and that approach is so really kind and non-threatening ... So, I think it's like osmosis. **Pippa 183-194**

And she recognises, as Nicole did earlier, that some of these observations may be of less-than-good practice. When and how these skills are required in her practice is explained by Pippa.

When they [the patients] are improving ... we get into the conversation about sedation withdrawal ... we'll talk to the parents ...' **Pippa 159-162**

Continuing this theme of gaining effective communication skills, Abigail identifies how feedback from the wider team can help to develop and refine such expertise. She identifies her experiences with respect to her handling of somewhat difficult conversations she may have with parents.

*The nurses at the bedside are really great for giving you context ... or even if I've had quite an honest conversation with the families about the sort of things I'm worried about, when I go back I can ask the nurses 'How did they react?'. You get a certain amount of feedback (non-verbal) at the time, but you can [ask the nurses] 'Do you think I was a bit too brusque, a bit too direct, and how did they take that?' ... You can get that feedback. **Abigail 182-189***

6.4.1 Clinical Practice – sub-ordinate theme

***'To me, learning in practice is probably the most valuable thing... I think book learning and all of that is useful as well, but it doesn't give you the context of the reality of being in a clinical environment.'* Abigail 212-213**

This theme is concerned with the specifics of clinical practice. The emergent themes supporting the *Sub-ordinate theme: Clinical practice* are found in Table 6.3. This includes clinical skills and communication skills, the application of theory to practice, and learning what 'works' - that is the heuristics of this clinical workplace. The care and management of these children is individualised, which may require adaptations and variations to fulfil this need. There is great job satisfaction to be had in being part of this process, as Angela explains here.

*And I think one of the things is the fact that the vast majority of the time we win ... sometimes it doesn't feel that way if you've got a bad day or a bad week you think 'what the hell's the point really' but most of the time it's because we do win ... parents come back with the child and show you: 'look: going home, walking and talking and normal. We've got our child back'. **Angela 168-171***

Workplace learning per se

Specific opportunities for learning in practice (and how the actual clinical setting is beneficial) are identified by the nurses, and ANPs, and marginally less so by the medical staff. Angela reflects on how taking part in this study has reminded her of its importance.

*It made me realise how much learning there is that's not formal. If you recognise and take advantage of opportunities ... it's just those chances that sometimes you have to take. **Angela 467-468 & 470***

For Nell, this is her identified preference, either due to the personnel in this setting, or from the opportunity to gain 'hands-on' learning, which is also beneficial to Nancy.

*Most things I've learnt in the clinical area, from other members of staff. Some in the classroom, but I learn more from doing. I need to fiddle with it to learn. **Nell 21-22***

Because I am a practical person, I like to see something, and I can generally do it after I've seen it I think it's always been something that I think I've known happens. Nancy 268-270

Emergent themes	Sub-ordinate theme: Clinical practice	
WIL per se	Angela	<i>It made me realise how much learning there is that's not formal ... recognise and take advantage of opportunities 467-468</i>
	Nell	<i>Most things I've learnt in the clinical area 21</i>
	Nancy	<i>The theory ... didn't make as much sense until I'd actually done it 287</i>
	Abigail	<i>Book learning ... is useful as well, but it doesn't give you the context of the reality of being in a clinical environment 212-213</i>
	Nicole	<i>Everything I've learned on here has been a combination really, of informal and formal 134</i>
	Pippa	<i>It became a bit of an art rather than a science 94</i>
	Natasha	<i>I think a lot of [workplace teaching] goes unnoticed by the individual – it's just part of their role 163</i>
	Debs	<i>It [workplace learning] is what I do every day isn't it? 40</i>
Learning from patients and parents	Nicole	<i>I can remember if I've [nursed] a particular patient 192</i>
	Angela	<i>I think [learning from a patient] is going to stick a lot more than anything else 87</i>
	Pippa	<i>[If] you have got like emotional ties ... it's quite powerful to you 140</i>
	David	<i>Parents expect to be more involved in a lot of care decisions, and indeed to make some of the healthcare decisions 130</i>
	Nancy	<i>Parents ... expect to be part of the team more than they did before 125</i>
	Debs	<i>The relationship with parents has changed ... I find that difficult sometimes 110</i>
Practice developments	Nell	<i>We're more autonomous, and more proactive 43</i>
	Nancy	<i>Our surgeons at the time ... didn't want us to do that 97-8</i>
	David	<i>We'd encouraged autonomous practice ... for nurses to practice more independently 317-8</i>
Learning from critical incidents	Natasha	<i>In-house study days now are based around critical incidents ... it's more applicable and relevant 54-55</i>
	Nancy	<i>We've actually changed our practice, and everyone can see that it's been a patient safety thing and it's worked really well 98-100</i>

Table 6.3: Emergent themes supporting the Sub-ordinate theme: Clinical practice

Although Nancy can appreciate the need to link this practice to theory, this takes on greater importance once she has, in addition, gained practical experience. She expands on this, to give a more detail account here.

I think it [WIL] is very important. As I say, I prefer to watch and then actually do it myself, and then it's stuck in my head. If I'm sat in a classroom and it's written on the board it doesn't tend

to go in as much as actually seeing it in front of me. Although the theory actually was there, it didn't make as much sense until I'd actually done it. Nancy 283-285 & 286-287

Abigail and Angela recognise the impact of context on learning, identifying its inherent value, and the benefits of recollection greater than that of more formal learning situations.

To me, learning in practice is probably the most valuable thing... I think book learning and all of that is useful as well, but it doesn't give you the context of the reality of being in a clinical environment. Abigail 212-213

I think on the whole I probably retain more learning it that way, in bits relevant to the patient at the time. Because it's those little snippets oftentimes that stay with you more than an hour lecture. Those are the bits that you pick up as you go along, that let you think about the whole picture. Angela 476-477 & 494-495

Nicole also feels that the setting of paediatric intensive care – the depth and breadth of learning required, as argued earlier, lends itself to the promotion of WIL, and helps identify its worth.

I think everything I've learned on here has been a combination really, of informal and formal. I prefer the informal, but I see the need for the formal as well at times, ... I think you still need to think outside the box a little bit and not just rigidly stick to ... things. Nicole 134-138

She suggests here that one of the benefits of informal learning in practice is that it gives opportunities to think laterally. This is an aspect of learning opportunities in practice that Pippa has experienced. She knew the theory of pharmacology, but its application was sometimes different, and dependent on the variability of response of the individual child, and the clinical priorities. She describes it thus - *It became a bit of an art rather than a science you know* – **Pippa 94**, and gives an example of a clinical problem, specifically and in greater detail. To explain the context - children often require complex drug therapies, some of which are given via continuous infusions, whilst others are delivered as bolus infusions at regular intervals. Some drugs can be delivered with others; some must be delivered separately. Children may have several intravenous infusion lines, but the number of lines available may be limited for many reasons (for example suitably sized veins) not least due to their size and age.

I think things like compatibility - so if you've got a line and you've got six different drugs to go in ... there isn't a black and white answer, we're going to have to meet the child's needs and its medication ... You might come up with an idea 'If we put this and this together' ... and one of the nurses will say 'Well, what if that's [a short-term infusion] going to be stopping in six

hours, what if we put that one there' and you sort of come to a shared solution ... Because this is their bread & butter and they're spending 13 hours a day or whatever with the patient. They do know the patient a lot better than we do when we're there for twenty minutes, so there's a huge amount to be learned from the nurses. Pippa 241 & 243-249

In such a situation, as Pippa explains, there is no definitive answer, but a complex problem to solve together. She identifies that she can learn from the nurses' more in-depth understanding of that patient. Learning about and appreciating the skills and knowledge different people bring is vital to promote good working relationships. Recounting her experience is an exceptionally apt demonstration of clinicians working together to solve a practical problem to the benefit of the patient – the heuristics of clinical practice.

Participants not only identify some of the benefits of situated learning, but there is a recognition that such learning (and indeed teaching) may be an implicit rather than explicit activity, as noted by Nicole and Natasha.

I don't think people here always realise they're teaching when they're teaching. Part of me thinks there's this view that teaching has to take place in a classroom and ... I think to see something actually in use ... and if there's something they don't know about it, then you've taught them there and then. Nicole 171-173 & 183

They probably don't [realise they have teaching skills], because some ... say 'oh no I can't teach' and yet they're doing it on a daily basis, and when you point out to them 'you've acted as a mentor, you have brought these nurses along' then they just start to realise that yeah, they do do that on a daily basis. ... I think a lot of it goes unnoticed by the individual – it's just part of their role. Natasha 159-163

Debs considers workplace learning to be closely integrated into her everyday work practices.

Well I mean it [workplace learning] is what I do every day isn't it? Debs 40

She finds this ethos is further reinforced when she finds more junior medical staff are omitting what she feels are basic applications of theory to their practice.

So, it sort of reinforces for me that, you know, you have to actually really pay attention to every little detail. Debs 40-45

Nicole demonstrates not only this recognition and understanding, but also a commitment to supporting workplace learning opportunities for all staff. Here she gives a practical example of explicit but informal teaching within the workplace.

I think people think of teaching as having to be getting out of the clinical area in the classroom whereas I think we're trying to change that here by introducing this tea-trolley teaching.
Nicole 89-91

This is an innovation which Natasha also speaks of, and who describes it in greater depth.

One of the medics saw it [tea-trolley teaching] at a conference and thought it was great. And basically, whenever the tea trolley is around ... [to give context here, staff usually work long shifts, and over the course of the day, or night, it is often difficult for staff to leave their patient to make themselves a drink, hence the tea-trolley.] ... then someone will be there with a snapshot of just 10-15 minutes of teaching. So, we're trying to pick a particular topic where a variety of people can have their input ... ventilation for example [where] someone's doing mixed venous gases, someone's talking about the new suction policy and protocol, so it's all a little bit informal round a tea trolley, and the medics and physios are involved. **Natasha 109-115**

Learning from patients and parents

Nicole gives an example of how caring for a specific patient deepened her learning. This was a patient with a clinical problem that she'd had little experience of previously. To place this in context, the PICU was originally 2 specialist paediatric Units, a cardiac ICU and a general ICU, so experienced staff in one Unit may have less experience of the patient clientele in the other. Nicole demonstrates a critical thinking and problem-solving approach, in that she identified what she already knew, and looked to transfer that learning to this patient.

I think you look back on your knowledge that you have around systems, to actually adapt it. And I remember ... I looked after a patient with DKA [Diabetic Keto-acidosis] it was only a year or so after we'd combined together, so I hadn't done an awful lot of general, I still tended to do more cardiac ... and I had one of the most enjoyable shifts. I really remember it, and I remember writing about it on my 415 [Paediatric Intensive Care course] because it just suddenly hit me, well actually, you know what, I know about electrolytes, I know about renal... I know why that's gonna happen, and what to look out for, and I was fine, you know it was really interesting ... **Nicole 119-129**

She also demonstrates a willingness to recognise the expertise and experience of others working alongside her, and the support they could give to her learning, despite her seniority by grade.

... they'd said 'are you OK?', I said 'Yes, I will come to you if I need to', and yes, I did go to them and say 'This is what I think, is this right?' and did use them you know, ... cos I think it's always quite hard when you're a more senior nurse as well, asking someone, cos actually I was asking someone that was more junior to me, but they had the knowledge that I didn't, cos I was much more used to doing cardiac at the time. **Nicole 143-147**

This shows not only a commitment to continued learning, but role-models to her colleagues a professional attitude to such learning opportunities. And for Nicole, one of the benefits of learning from patients is also her enhanced ability to recall these situations, which she emphasises here.

You can actually remember doing it then, it's just one of the ways, I know everyone learns in different ways, I can remember if I've done a particular patient, I can remember it. And I can relate it to that patient. Nicole 190-192

Angela also provides a strong example of the potential for depth of learning in practice. The patient she speaks of was a toddler and appeared to have a chest infection. But her condition deteriorated dramatically, and the child wasn't responding to treatment. Angela explains how during a radiology teaching round, the radiologist identified some very subtle signs on a chest x-ray which led to a successful change in clinical management.

He had actually turned to answer a question and sort of turned back, because out of the corner of his eye he caught something none of us had noticed – some tiny changes on the top of her humerus which led to some tests, and she actually had a ... very rare type of cancer that had invaded her lungs. Angela 68-71

When a chest x-ray is required then there can be a tendency to focus on the lung fields, and less on the other features captured on film. Angela explains how this particular incident has impacted on her learning and future practice.

Somebody tells the class on interpreting [chest] x-rays that you should check the bones as well as everything else, but until you hear or see that happen you don't appreciate the significance it can have, and I think it's going to stick a lot more than anything else. Angela 85-87

Pippa speaks of the emotional impact of clinical practice, and the power of such learning, when linked to patient stories that she has experienced at first hand.

When you actually talk about a real situation it's more powerful than talking about how a drug works ... I've talked about drug reactions you know and medication errors ... something really desperate has happened and [for learners in a classroom] it's just a bit like a story really isn't it? Whereas you have got like emotional ties to this, ... it's quite powerful to you. Pippa 131-133 & 136 & 140

Parental expectations also impact on practice and become required learning. Effective communication is required to make this a positive experience for both parents and clinical staff. David explains how such dynamics have changed over time.

I think parents are now more 'erm demanding? I don't know if that's the right word. Parents are more involved, or perhaps in the past they were more passive, so they listened to what the clinical expert said and accepted the word of what the clinical expert said. Now I think parents expect to be more involved in a lot of care decisions, and indeed to make some of the healthcare decisions. David 126-130

Nancy is in agreement over this change in staff/parent relationship, and some of the reasons for this shift.

I think parents expect more now than they ever did before, and I think they expect to be part of the team more than they did before, I think because they've got a greater working knowledge of what they should expect as well. I think there's more information out there for parents as well, where they can see what they've got a right to if you see what I mean. Nancy 125-128

Debs in particular find this a difficult change to learn to manage.

What has changed ... is that then we [medical staff] were a lot more directive in our treatment, not only options, but what we presented to the parents. Now we're a lot more 'do you want this, or do you want that, or do you want something else?' That's where the relationship with parents has changed ... I find that difficult sometimes. Debs 105-110

Whilst the challenge of decisions over the care and management of critically ill children are outwith this study, this situation demonstrates that changes in the culture outside of the Unit have an impact on practice. David explains the tensions and potential reasons for such difficulties.

I just wanted to say one more thing about parents, ... it's the idea that good parents (whatever a good parent is) aren't the best people to make a decision for their children ... in some critical situations because they care too much about them. So, if there's some sense of we should be acting in the child's interest ... you can have an objective conception of what would be in the child's interest, then parents care too much to be able to stand back and take an objective conception of them. David 185-189

This also demonstrates the need for continued learning both personally and professionally; individually and collectively, in order to maintain positive relationships in challenging situations.

Practice developments

Changes have occurred over time, relating not just to changes in the management of but by nursing staff taking on different roles and levels of responsibility.

There is learning to be had in taking on such roles initially, and further learning occurs as a result of practice and experience.

It's important to know more about gases and x-rays as we are more autonomous, and more proactive in asking doctors and telling them things. In the past we relied on doctors to notice and initiate things, such as prescriptions and protocols. Our role has changed; we're more in charge of the patient, like deciding when to extubate. I've learnt some things in the classroom, but others in the clinical area. Nell 42-49

Likewise, changes in protocols and practice develop over time in response to the expertise of experienced staff, as explained here by Nancy.

We've changed the way in which we wean ventilation and extubation, again through the experiences of the staff ... because we realised that the weaning guideline protocol ... was actually quite restrictive, ... so we built in a bit more flexibility in the policy ... And again, it's all about experience isn't it? It's tight to start off with and then as people are used to it and want to work outside of that guideline, then you need to change it to allow for that experience to build. Nancy 172-175 & 179-181

The opportunities to learn and develop new and extended skills sometimes involved determination and required a change in culture. Staff in the MPT needed to learn to appreciate that nurses could develop additional skills and responsibilities. Nancy explains how an overseas volunteering mission with the Unit's surgeons led to opportunities to learn and demonstrate new skills and expertise. The children required surgery for congenital cardiac defects, and because of the context, the nurses learnt to remove chest drains and cardiac pacing wires.

[In] lots of other units around the country the nursing staff remove chest drains, but our surgeons at the time, were not the ones we have now and didn't want the nursing staff to do that. And then there was a full team from [our Unit] ... and a full team from Y. And the Y nurses obviously removed chest drains and pacing wires, and it was a kind of 'see one, do one, teach one to somebody else'... kind of scenario because ... the children had to be out of intensive care. And [every morning] ... all the drains were taken out... Our surgeons witnessed the fact that we did 20 patients, we were all novices, and we didn't have one pneumothorax [a potential problem when removing chest drains] ... so it developed from there really, ... in some ways we went out to teach ... but we actually brought something back that was beneficial to the Unit. Nancy 76-87

For some fellow nurses, this also involved the need to develop a change in their perceptions of who should take on such roles. Nancy again describes how nurse

colleagues at first thought of her extended roles as medical roles, and not ones that nurses should undertake.

My [nursing] colleagues were 'You're a nurse you shouldn't!' **Nancy 190**

But she explains that things changed over time, such that

The nurses say, 'You put the cannula in because you've demonstrated your ability.' And they change their culture ... and I think it's the same with chest drains now – I think they'll call nurses to do chest drains before they'll call a registrar because it's done in a more timely manner for the patient, because you're available to them. **Nancy 212-213 & 216-218**

As a doctor, David had no problem in encouraging such developments within the nursing team.

We'd encouraged autonomous practice and ... formalised those roles I think there's often been encouragement for nurses to practise more independently. **David 317-318**

The nurses taking on extended roles had to learn the psychomotor skills and theory, whilst the wider team had to learn to accommodate the changed dynamics of roles and responsibilities.

Learning from critical incidents

Unit-wide learning can occur because of issues identified at critical incident meetings. Natasha explains how these incidents form part of in-house study days, but that in addition, this learning continues as part of everyday practice.

In-house study days now are based around critical incidents ... why they've happened, and what steps to put in place to rectify it and try to prevent it happening again ... it's more applicable and relevant to the nurses on the Unit so they can learn from it ... Obviously then you then have to put it into practice with your patients ... so you just utilise it on a daily basis. **Natasha 54-60**

And in addition, a specific situation, related to critical incidents and improved patient safety, is identified by Nancy.

We've actually changed the way in which we set up and build our [ECMO] circuit in response to some critical incidents ... and it's actually made the circuit safer. So ... we've actually changed our practice, and everyone can see that it's been a patient safety thing and it's worked really well. **Nancy 92-93 & 98-100**

Learning from such incidents is shared and transferred to everyday practice, as evidenced in these scenarios.

In summary

The clinical environment – the workplace - is a valued source of learning for all participants. There is the acknowledgement that clinical practice gives the opportunity to do just that – practise – but that it also enables the application of theory to practice, bringing with it a deeper appreciation and understanding, specifically identified by Angela, Nell, Nancy, Abigail, Nicole and Pippa.

Learning from specific patients is identified by Nicole, Angela and Pippa as an important element of workplace learning. Utilising the expertise of other members of the multiprofessional team was appreciated by Nell, Nancy, Natasha and Angela. Resultant outcomes following critical incident meetings also influenced the learning of Natasha and Nancy, but not that of David.

The actual physical environment is experienced as having a positive influence on WIL opportunities, not least by way of role modelling. Dominic, Abigail, Natasha, Nicole, Nancy, and Pippa gave the examples here. The workplace can also facilitate learning and teaching, both implicit and explicit, valued by Nicole, Natasha, Debs.

6.4.2 Professional Discourse - sub-ordinate theme

‘the interactions. It is that.’ Dominic 14.

There are many staff on the clinical ‘shop floor’ – day and night. The Unit has space for up to 23 patients, so at any time there are at least 20 nurses on a shift, in addition to 3 junior medical staff or ANPs, as well as a lead consultant. Members of the wider MPT may not spend their whole shifts on the Unit, but will be a strong presence, as will additional medical staff from other specialisms who might also contribute to the care and management of the children. This gives the potential for many interactions by way of professional discourses. The primary function is to ensure that management and care is co-ordinated, with appropriate input from specialised groups of clinicians. In addition to this, participants identified strongly that there are benefits of such discourse with respect to learning opportunities. The emergent themes supporting the *Sub-ordinate theme: Professional discourse* are found in Table 6.4.

There are also more formal opportunities for discussion and conversation by way of ward rounds, and clinical meetings. The participants who made explicit reference to discussion as

a means of debating treatment and management options, and who identified this as a learning opportunity were the ANPs, the medical staff and the pharmacist.

Emergent themes	Sub-ordinate theme: Professional discourse	
Learning from the MPT	Nell	<i>I pick the doctors' brains and they teach</i> 33
	Natasha	<i>Everyone's got their own input and everyone's happy to teach</i> 70
On-to-one conversations	Angela	<i>You can talk to the consultant.</i> 235
	Pippa	<i>I can remember having conversations with X - quite heated debates!</i> 82
Clinical meetings	Angela	<i>You can often pick up little titbits.</i> 222
	Pippa	<i>Wards rounds give you an opportunity to see how others think.</i> 292
	Dominic	<i>We can have those discussions and people can even play devil's advocate.</i> 66
	David	<i>It's not really reflection ... you also want to look outside of work.</i> 343
Ethos of discussion	Abigail	<i>People would talk very openly of lessons learned.</i> 100
	Debs	<i>In other Units you would work a lot more in isolation.</i> 54
	Dominic	<i>I try to be open to discussion and interaction.</i> 33

Table 6.4: Emergent themes supporting the Sub-ordinate theme: Professional discourse

Learning from the MPT

An earlier subordinate theme identified how being a member of a supportive MPT encouraged and motivated learning. What follows are examples of how learning takes place as a result of working alongside other disciplines. Nell has a very pro-active approach in her practice and contact with other specialist staff, as she demonstrates here.

I learn a lot from the MPT, from the doctors. We discuss things and I pick the doctors' brains and they teach. From the physios I learn about x-rays and positioning. The pharmacists are a valuable source of information. The dieticians tell me about the children with complex needs and the milk feed additives. I ring around the wards, like oncology, and ask for information, also neuro and ask about EVD's [extra-ventricular drainage - a specialist neurological intervention for draining cerebro-spinal fluid]. And the lab if there's something [specific] about a specimen. **Nell 33-37**

Nancy also shows her openness for learning from the medical staff as part of everyday work practices. In the first instance she speaks of explicit teaching and learning. When she identifies opportunities from the ward round, this is via watching and listening – a more passive and implicit learning opportunity.

*Yeah, I think you learn from them all the time. Certainly, when I was doing my cardiac Masters [degree], cardiologists on ICU were excellent in terms of helping me to listen to [cardiac] murmurs, showing me echoes [ultrasound scans of the heart] ... I think you learn from watching what goes on both clinically when they [doctors] are examining the patient on the unit, and from the ward round ... where we look at x-rays and scan reports and blood results and all the rest of it, so I think you learn different things from each of those. **Nancy 114-118***

And Natasha describes how other clinicians within the MPT are not only sources for learning, but willing teachers.

*The medical staff are a great resource if there's anything you're stuck with. They're the experts that are gonna help you, or the other more experienced nurses on the unit. And you've got the Unit pharmacists, dieticians - everyone's got their own input and everyone's very happy to teach. **Natasha 67-70***

When asked who she learns from and in what circumstances, Angela readily identifies a number of specific learning opportunities in detail here.

*All the time. From everybody I possibly can ... in morning handover ... the radiology round ... And the same thing with a dietician. ... The pharmacists are an amazing resource – I use them mercilessly! ... From [children with on-going and/or complex needs] you can learn from the parents ... what works. ... and it gives you clues on how to handle that particular child in this particular instance, so all of those people. And ... daily practice, right? Every time you assess a child it just adds to your skill. **Angela 235-274***

One-to-one conversations

Pippa speaks of conversations she had both with the nurses, and the doctors. These are 2-way interactions, giving and receiving information and sharing specialist and practical knowledge – the heuristics of clinical expertise. They centred on determining priorities and having debates and arguments (professional ones) about how these may be put into practice.

Some of the children may have required antibiotic therapy, and if their renal function was poor, then deciding on their drug dosage can become a professional judgment.

*I used to ask them [the consultants] loads of questions and they were really, really helpful I know about the drugs, but putting it into practice ... [for example for those with poor renal function] should we reduce the dose? But actually, weighing that up ... if we reduce the dose it's going to be less effective ... in this situation what's the importance? ... Killing the bacteria, or preventing side effects? **Pippa 45-49***

There is the need to balance differing priorities of care and to negotiate what is best for a specific patient. Pippa explains how this becomes a learning opportunity.

I can remember having conversations [with X] and I would have quite heated debates about a vancomycin [antibiotic] level ... At the end of it we were [arguing] in quite a humorous way ... that was a great ... I think you did learn together and I think maybe it's just as well if you've got an approach that ... rather than I'm telling you 'em I think both of you then have an opportunity to learn from each other And I'm always happy to say 'I've got that wrong' you know and 'what do you think? Pippa 82-90

Sometimes concerns may be difficult to explain. Knowing each other well enough to share such concerns can lead to learning opportunities, and impact on the care of the child. Pippa couldn't identify a specific occasion for this scenario but identified this as a way in which she has learned from such chance discussions.

I have valued just this kind of the intuition the nurses will have on a particular situation ... you might be going through the formal process like checking the prescription etc. and not necessarily identify any problems, ... and then the niggle that the nurse has got is actually an issue that needs to be resolved that you wouldn't necessarily have picked up from a formal review of the prescription. Pippa 226-230

Angela identified the benefits of discussions with her consultant colleagues and the surgeons, to clarify and question.

... you can talk with the consultants ... on a one-to-one basis, and it's not meant to be a formal teaching realm, but it is a good time to learn things, or to ask questions ... when you're admitting a post-op cardiac patient because you've got the cardiac surgeon right there and you can then ask questions ... Angela 235-274

A personal reason for finding such conversations useful is evidenced by David here.

I think I've always been quite a questioning practitioner ... when I was a junior doctor, one of the places I worked I was known as 'Doctor Why' because people would say 'we're gonna do this' and I'd say 'why?' ... I was interested to know what people's reasons were, and by and large when I make treatment decisions I try to understand why I've made them ... one of the things I say if a nurse or a junior doctor come to me ... I'll always say to them 'what do you want to do?' ... and if they want to do what I think is the right thing to do then I say 'really good, that's exactly what I'd do'... or if they want to do something that you think is different then I'll try and tease out what their reasons are. David 299-307

He uses these conversations as a means to support the learning of other colleagues as well as helping him clarify his own rationale. And in spite of his own seniority and experience, Dominic continues to find conversations with colleagues of benefit.

You've always got experienced colleagues around that you can go and bounce ... What you think about this? What do you think about that? **Dominic 112-114**

Clinical meetings

Pippa describes the benefits of learning about and understanding the perspectives and priorities of other clinical colleagues, for example on ward rounds.

... ward rounds ... give you an opportunity to see how [others] think ... I think pharmacists think differently to doctors, who think differently to nurses as well ... if you're talking about a problem and you've got a multi-disciplinary team there ... get an idea of what other people take into consideration when they're making a decision, which wouldn't necessarily be how you would do it, and that's a real benefit ... We're [pharmacists] selected as being very pernickety people, that detail is really important, because that's what your job is, ... and that's obviously a benefit of working in a team isn't it, you do have those different roles, somebody's taking care of the detail and somebody's doing the grand strategic thinking which we're probably not. **Pippa 292-298**

Angela also finds the meetings an important source of learning.

Almost always there's a few patients that get discussed, ... they [the medical staff] will start asking questions or offer opinions or tell a story. And from that you can often pick up little titbits ... [or say] 'I've thought about this, this, and this, or I've already done this and this, and sometimes they'll say you've got it all there is no more and sometimes they'll say 'if you're thinking that, why don't you also do ... this?' you know, sitting in handover, if the consultant's having a discussion – I feel sorry for the people on nights who really only want to go home to their beds but by golly I've learned a lot. **Angela 220-223 & 471-473**

And Dominic likewise. He describes the mechanism for these challenging discussions and suggests that this strong debate tests the rationale for decisions.

We have those discussions and people can even play devil's advocate and there can be a lot of discussion and that'll push and challenge ... every morning, the handovers and the patients we discuss, there'll be an area of challenge, multiple people inputting into a problem with a patient in a situation or scenario, and weekly consultants' meeting we'll do the same, so the whole environment is actually one of inputs, challenging, thinking ahead, people playing devil's advocate. **Dominic 66-71**

The impact of critical incidents was noted as a source of learning within the subordinate theme of Clinical Practice. However, David doesn't find these meetings particularly beneficial, as he explains here.

Once a month we'll have a mortality meeting or a critical incident meeting, but it's not [necessarily] talking through what bugs me or what we've done. The reason I say it's not really reflection is I think you also want to have some ability to look outside work or at the books or Google or whatever. **David 340-344**

He identifies the need to add additional depth to the learning process using critical reflection and external sources of evidence.

The ethos of discussion

Dominic identifies that there is scope for such vigorous deliberation due to the underlying ethos of this particular Unit.

*The environment is such that people aren't particularly sensitive, and there aren't people who are particularly dominant or critical over open discussion. Sometimes there'd be a difference of opinion, and there might be conflict about it and then if there is we talk about it and get over it. So, I think the environment has allowed us to have these on-going challenges; ongoing challenge, I think that's what it is. That may be the nature of the work. **Dominic 87-92***

Abigail further highlights that one of the specific ways in which this team learning can occur is as a result of particular meetings.

*And quite often in ... meetings, we'd talk about the care of the children and quite often people would talk very openly about lessons learned and what we should be better at doing next time and how we could be more proactive. And all of that shared discussion and critical thinking about the clinical management of the patient makes you store those gems in reserve ... I'm not sure it's something we actively do, it's more like a culture of how can we do this better? **Abigail 99-105***

She identifies the almost implicit nature of this practice - a culture that has developed over time.

Interactions with her medical colleagues are appreciated by Debs. She values these questioning, thought-provoking, collegial discussions as a means to support continued learning. She identifies that what she experiences as a positive attribute is not necessarily a culture found in all Units.

*It is extremely useful to have other seniors there who can just point out little things: 'have you thought about that', or 'did you do that already', and 'what about x, y and z?' And that's a great exchange, and if you don't have that, I mean I work in other units where you work in a lot more isolation and that's what I'm really missing there. **Debs 51-55***

Vocalising clinical arguments and judgments enable others to learn and gain a deeper understanding of how decisions are determined. When asked to elaborate, she was clear in her reply that this discourse wasn't limited to medical staff.

*Me and the medical colleagues, obviously, but also me and the nursing colleagues ... other medical colleagues, seniors, but also juniors have had good ideas, and nursing colleagues are very important. **Debs 58-62***

Dominic is clear as to his ethos of involving others in decision-making.

*I try and be open to discussion and interaction, ... as a senior I try and make most decisions be discussion decisions, although ultimately the final decision lies with me. But I try not to differentiate between different people in the team, in fact quite often I think the senior nursing people are more influential on the way I think and do things than other people to be honest. ... there's a lot of discussion as to what one's doing and why is one doing it. There are some aspects that other members of the team have a better feel for, you know? HF, EMCO, those kinds of things, so they take a lead on some of those kinds of decisions because they have the better insight. I suppose it's interaction. **Dominic 33-37 & 42-45***

And in the detailed example above, he identifies the benefits of discussion in decision-making and also the acknowledgement of the expertise of others.

In contrast, Abigail reflected on the passivity of some student nurses with regard to their learning. She suggests that

*Working in ICU [requires] critical thinking and being able to do baseline problem solving so I think that's probably learned as you go ... but I don't know that people verbalise it that much. **Abigail 129-132***

I asked her if she thought they needed to learn to be more engaged in practice, in order to further their learning. She considered that ...

*Maybe we don't use it enough, we don't challenge people's thinking enough. We could change that sort of culture by challenging [her nursing colleagues] people more on what their line of thinking is and what do they think would be the right thing to do next and the pros and cons of different approaches. **Abigail 240 & 252-254***

In summary

Formal and informal workplace conversations are a source of continued learning for the participants. Dominic gave the strongest account for its importance, identifying discussion as a means of not only sharing understanding but also determining the rationale for decision-making.

One-to-one conversations were positively identified as supportive of learning by Pippa, Angela, David and Dominic. Opportunities for interactions within clinical meetings and ward rounds were identified by Dominic, Angela and Pippa.

Attitudes towards the use of discussion its ethos within this setting, are positively identified by Dominic, Abigail and Debs. Abigail considers that this is not always evidenced in the discussions that nurses have amongst themselves. Interestingly, the participant nurses

did not specifically refer to professional discourse in the same ways that the other clinicians did.

6.5 Self-Identity – Super-ordinate theme

I didn't choose it; it chose me I think! Nancy 10

In life we hold a number of different identities that define us. They may be recognised by ourselves or in relation to how others see us. Self-identity in the clinical workplace encompasses clinical roles, team roles, levels of expertise and the extent to which participants consider themselves to be life-long learners. During the interviews participants recognised aspects of their own identities and also spoke of how they thought others might perceive them. In doing this they demonstrated a high degree of self-knowledge and reflection, and gave examples of how identities influence and impact on the experience of workplace learning.

As individual clinicians they could clearly explain their current roles and contribution to the care and management of the patients. In the detail of their responses to the interview questions, participants give explicit examples of their practice on a day-to-day basis, identifying how they have maintained and indeed developed their level of expertise over time.

This was not a static viewpoint, as in 'I've attained this level of skill/expertise, so there is no further need for development'. On the contrary, the importance of not merely maintaining but extending their level of expertise is visibly apparent. This is explored in the section relating to their 'expert' identities, and the extent to which they describe themselves as such.

As clinicians and members of their specific professions, teaching and facilitating the development of more junior staff is an important part of their role. In knowing and understanding how they themselves have learned and developed their practice (and continue to do so), they can use that knowledge not only in identifying ongoing learning opportunities for themselves, but also for these junior staff. In teaching and working alongside others, participants also identify how the clinical workplace impacts in a positive way on their own continued learning.

As clinicians representing the MPT, the elements of the expertise demanded by their roles has changed over time, and has impacted on the work practices of the team, their roles, and their responsibilities. The workplace shapes, motivates and promotes the learning required to develop and nurture this team identity. There is recognition, within their experiences, of the role of the workplace culture, and its impact on the learning environment and the common support of learning.

6.5.1 Identity as a clinician - sub-ordinate theme

I'm a clinician by heart and nature. And although we don't like the hours, and whinge a lot I know that I'm a clinician by nature, that's what interests me.

Dominic 144-145

Looking back over their careers, for some participants the choice of paediatric critical care was a mindful decision, whereas for others it was more of a chance occurrence. In both cases, participants identify why this setting and their clinical identity is important to them. They continue to find this an area of high job satisfaction and a subsequent motivation to learn.

There is a professional approach to their own practice, and concomitant to that is the requirement - a professional responsibility - to support the learning of those more junior or less experienced. This also provides opportunities to revise or refine their knowledge and practice. The emergent themes supporting the *Sub-ordinate theme: Identity as a clinician* are depicted in Table 6.5.

Choosing a career in this specialism

Some participants made a conscious decision to work in paediatric intensive care, such as Natasha and Abigail. Natasha had experienced this specialism as a student nurse on placement, and could identify what attracted her to this area, and how she experienced the challenge of continued learning as a positive one.

I came here as a student – as one of my final placements - and loved it! And my mentor at the time was really inspirational. I very much enjoy the one-to-one, when you get to know your patient really well and you've still got family interaction, and the big learning curve – you never know what's coming through the door. There's never a dull moment and you never stop learning. Natasha 6-7 & 11-14

Emergent themes	Sub-ordinate theme: Identity as a clinician	
Choosing a career in this specialism	Natasha	<i>There's never a dull moment and you never stop learning</i> 14
	Abigail	<i>I thought it would be an opportunity to develop my horizons</i> 12
	David	<i>I didn't really choose a career in PICU, I drifted into it</i> 9
	Pippa	<i>it's all so fascinating</i> 15
	Nell	<i>I might be bored anywhere else, and it wouldn't be my cup of tea</i> 17
	Nancy	<i>I like the diversity of it really ... a mix of clinical skills and a mix of office time and managerial skills – leadership</i> 19-20
	Debs	<i>[I chose ICU] ... I never regretted that choice</i> 13
Clinical Identity	Dominic	<i>I'm a clinician by heart and nature ... that's what interests me</i> 144-145
	David	<i>It's the diagnosis and the practical skills, and the treatment</i> 27
	Abigail	<i>You're making a difference</i> 25
	Nicole	<i>I don't think you could do the job without it, [clinical expertise] because you start losing credibility</i> 55
	Debs	<i>You have to ... get in the mode of anticipating problems and sort of trusting your gut feeling</i> 35
	Angela	<i>It behoves you always to be a bit on edge</i> 405
	Nancy	<i>I'm getting new learning opportunities and new skills to add to my collection</i> 35
	Pippa	<i>[making things] better for the child - it's very satisfying</i> 18
Clinician as a teacher and facilitator	Natasha	<i>there's a huge percentage of ad hoc teaching – opportunistic teaching</i> 149
	Dominic	<i>I've had ... good teachers ... and we continue that kind of environment</i> 116&121
	Nell	<i>I couldn't teach knowledge-base, but I can teach on the job</i> 17-18
	Pippa	<i>We can't just perpetuate practice which may be out of date. So, you do have to have the theory behind it don't you?</i> 282
	Nancy	<i>Supervising others ... keeps your expertise</i> 71
Reflection and application of learning	Nancy	<i>A lot of [learning] is experience and reflection</i> 107
	David	<i>'have we got the diagnosis right? ... are we missing something?</i> 167
	Abigail	<i>you get more adept at pattern recognition</i> 38
	Dominic	<i>Do we document or record for reflection? ... I think when we synthesise things it's always been vocal/oral</i> 164

Table 6.5: Emergent themes supporting the Sub-ordinate theme: Identity as a clinician

A personal move led Abigail to consider which clinical area would be an appropriate one to move to. The breadth of opportunity in critical care was a positive attribute.

I worked in renal, and when I moved ... I thought it would be an opportunity to develop my horizons and do something more broad so ICU came to my mind then. **Abigail 11-13**

For others, it was more of a serendipitous occurrence. David explains that his interest in paediatric intensive care came about because of postgraduate training placement

opportunities. Like Natasha and Abigail, he can identify what he finds positive about practicing medicine in this setting

I didn't really choose a career in PICU, I drifted into it by virtue of the training I'd had. **David 9 & 18**

Pippa became the PICU pharmacist not by choice, as she explained that there was no-one else to do it. But once there she did not want to do anything else because she enjoyed the teamwork, and described the work as thus: *'it's all so fascinating'* **Pippa 15.**

Nell enjoys the challenge required to practice nursing in this environment.

I do like the work and I might be bored anywhere else, and it wouldn't be my cup of tea. The work would be more repetitive. **Nell 16-18**

Others identified the variety and diversity as adding to their job satisfaction. The range of skills required is spoken of by Nancy as something that she enjoys.

I didn't choose it; it chose me I think! I actually wanted to work with children with heart disease – congenital heart disease, and when I was applying for my job, there were no spaces in the cardiac unit ... the matron who was over all those areas said 'I've got some space in ITU, just come with me and stay a year and 23 years later I'm still here! I like the diversity of it really, because there's a mix of clinical skills and a mix of office time and managerial skills - leadership. It gives you the opportunity to work in two different ways in the team if you like; you're still using your clinical expertise, but actually in a more supportive role as well with your colleagues. **Nancy 10-12 & 19-22**

For Debs, it was more of a pragmatic choice, and enabled her to combine a life outside of work, and one where she could practice medicine in a stimulating environment.

When I was cardiac SHO [Surgical House Officer], we looked after the ICU patients and I thought they were very interesting, ... I tried to decide between having an interesting job, having a family and preferably working part time. [I chose ICU] ... I never regretted that choice. **Debs 6-13**

The aspects of their work which either led participants to choose a job in PICU, or to remain in one, are commonly described thus, as 'variety', 'unpredictability', 'never a dull moment', 'diversity', 'things change quickly', 'fascinating' which crossed all groups and were prevalent in all cases. Excitement was also mentioned by Nell (apologetically),

I like the acuteness - that I have to think on my feet. And the variety. You don't know what's coming through the door. Excitement, no, not excitement, but that you have to think it through and deal with situations as they arise. **Nell 8-9**

and also by Debs and David.

I like the excitement when the patient is sick, and I like the satisfaction you get when they get better. Debs 16-17

I think it's a real sharp end of medicine, so the exciting bit about it is practical procedures and seeing sick children and making them better. David 23-25

To outsiders, it could be seen in poor taste to find such work exciting, and this area of discussion is something I remember from when I was a member of this team. We would reflect on this, given that for the families this episode would represent one of their worst nightmares. However, the outcome of working in an area that is stimulating and provides a high degree of satisfaction to individuals, is to have a team of well-motivated, experienced staff, keen to do their best for these children and families, and to continue to learn and develop.

Clinical Identity

Having chosen a career in PICU the experience of being a clinical practitioner in this field is a continuing source of interest and motivation for learning. The role of the medical staff is specifically referred to here by Dominic and David. Dominic is clear as to his clinical identity, and emphasises his point using repetition – he is a clinician by nature.

I'm a clinician by heart and nature. And although we don't like the hours, and whinge a lot I know that I'm a clinician by nature, that's what interests me. Dominic 144-145

Children are often admitted to the Unit with what could be described as a working diagnosis, but as David acknowledges this may not be definitive, and thoughtfully considers his role and the reasons for his continuing motivation.

And making them better in the broadest sense, so we often see children who don't have a diagnosis, or if we do have a diagnosis it's the wrong one or it's not complete, so it's all part of medicine ... it's the diagnosis and the practical skills, and the treatment, and the practical skills are quite difficult because we're dealing with these tiny children, and it is the reward of seeing most of the children get better. David 25-27 & 29

A further influence on David's learning is a very personal one, albeit with a positive effect on the patient. He also emphasises his point with repetition – 'really, really ...'

I think learning is very important to me and in fact it's not even learning, it's 'I hate being wrong'. I really, really, hate being wrong. So, the point behind learning is either to make it so that I'll never be wrong or make it so I can justify whatever I've done ... David 291-293

Dominic moves on from the general to the specific aspects of his clinical role, and reflects on the challenges of managing situations which can rapidly change, calling for quick thinking and decision-making.

[It's]interactive, things change quickly, people are pushing themselves, people are sick, you can make a difference every day, all the time, erm it's always challenging. I guess, being challenged, making a difference, doing something that's real with properly sick children.

Dominic 7-8 & 10

Like David, his repetition, in this case, 'making a difference', adds emphasis to his feelings. And Abigail also uses the expression 'making a difference' here.

You're making a difference because you have quite a lot of opportunity to impact on the patients. And the work's really interesting. **Abigail 25-26 & 32**

Nicole very clearly describes her ethos regarding how her self-identity is shaped by being a nurse in the clinical workplace. She speaks of the need to demonstrate to other staff her clinical expertise, and the commitment required to prevent depreciation of such expertise.

I don't think you could do the job without it, [clinical expertise] because you start losing credibility and the staff don't need someone ... that they feel doesn't understand the nitty-gritty of the job ... It's important that they see a manager who is going to get out there and get their hands dirty and help, and actually does know what they're talking about. And it's easy to get behind; it's very easy to get behind in things if you don't maintain your skills. **Nicole 55-61**

In a similar way, David agrees with this, the importance of maintaining such skills, albeit from a medical perspective. It is notable that both Nicole and David both use the expression 'nitty-gritty' to describe clinical work.

I think there is a problem with some consultants who don't actually engage with the nitty-gritty of it, and it's a particular problem in paediatrics because how you do the practical procedures matters so it's not just a matter of putting a drip in, it can actually be quite difficult, or you'd make them sick by doing it. **David 434-436**

Debs also identifies what she considers a key attribute of her work as a clinician, and its impact on her learning.

You have to ... get in the mode of anticipating problems and sort of trusting your gut feeling ... like 'something isn't quite right, I can't put my finger on it, but something isn't quite right...'

Debs 35-37

She is not identifying specific learning, but more that working and learning in her medical role is a way of 'being'. She goes on to give more specific examples of what this 'not taking things for granted' attitude means in practice, which is also identified in a similar way by Angela.

... so yeah, I think you have to learn that, and you have to learn to pay attention to detail, and to always do that and because it will catch up with you if you don't. Debs 37-39

It behoves you always to be a bit on edge. Angela 405

For Nancy, her professional identity is closely tied to her clinical roles, and the opportunities for adding to her repertoire of expertise, emphasised by her use of the phrase 'add to my collection'.

And even now I'm getting new learning opportunities and new skills to add to my collection. The ECMO team is the perfect example of that because as a nursing team ... we're fairly new, and the team's developed very quickly over about 3 or 4 years to the point that now there are a group of us who can be left without perfusion cover overnight, so it's a fascinating journey there ... quite amazing really cos that's been a new challenge to me in the last few years. Nancy 35-36 & 38-41

And Pippa sums up her feelings and experience very succinctly here.

[making things] better for the child - it's very satisfying. Pippa 18

For the ANPs, prior to studying for and taking on this role, they had been experienced nurses. This was most apparent for Angela, who spoke of her experiences over time in a more general sense, and defined one of the reasons for choosing to undertake the role of the ANP thus.

I wanted to know more ... I wanted the chance to also integrate bits that I'd learned at the bedside. Angela 10-11

In Abigail's case, although she didn't describe it specifically as such, her developing clinical role was the journey from experienced nurse, to novice ANP to experienced ANP.

In the start when I was in this job I always thought that I was like a second best, maybe not quite good enough because you always have very high expectations of what you're gonna be, ... and you probably set the bar too high for yourself ... but once you've been doing it for a while then you learn that actually what you know and what you can do is comparable [to the senior medical trainees] and sometimes even better because you've got the trust and respect of the rest of the team that you're working with – you actually feel that you're not second best, in fact you're probably quite valued for what you do do. I suppose it's being a bit more self-assured in what you do, and learning all the time from what you've done. Abigail 47-55

The increasing confidence in her ability in her role as an ANP results from the support from her colleagues. Identifying the learning from her practice is a key component of her development. Here she identifies more of where and what she learns.

*I'm sure a huge proportion of it is learning on the job ... you're more slick and you don't waste time doing the non-essential bits, and you get quicker ... you could be doing something and ... at the same time [thinking] about some piece of information that doesn't quite fit together in your head about a child, so you probably get a bit more adept at multi-tasking. **Abigail 77-83***

For David, he also recognises his changing place within the team structure, which has changed the dynamics of the ways in which he works.

*I suppose the other idea also is that I must be adopting a different position in the team, so I should change my role as I move from being young gun to being senior consultant ... and I also think that I've actually learned more from experience as I've gone through, so I approach things in different ways. **David 104-108***

Clinician as teacher and facilitator of learning

Clinicians have a personal and professional responsibility not only to ensure their practice remains current, but also to support the learning of others. This need to teach others who are developing as professional clinicians is, in addition, identified as a potential mechanism for learning. Natasha recognises the extent to which this occurs.

*I think the big thing about intensive care is there's a huge percentage of ad hoc teaching – opportunistic teaching. **Natasha 148-149***

Dominic reflects how he was taught in the past, and recognises the benefits of these approaches to learning. He also identifies how he, and indeed his fellow medical colleagues look to perpetuate such a positive learning environment.

*I mean I think that I've had very good training and exposure as a trainee, not just exposure to patients, and [also] good teachers, and have been very strong in the ... basic principles ... Think clearly and physiologically and stand back objectively. So I think the outcome from that kind of environment has been good for me. Speaking to my colleagues, most of them have come from that kind of environment as well, and we continue that kind of environment. **Dominic 116-121***

Debs here identifies how she has progressed from learner to teacher in her clinical role

*And now I've gone from being an extreme learner to hopefully being a bit more of a teacher as well. **Debs 27-28***

Nell doesn't think of herself as a formal teacher ...

I couldn't teach knowledge-base, but I can teach on the job. Nell 17-18

... yet clearly describes the different ways in which she supports nursing students and staff nurses, and how both groups of learners give her the opportunity to revise and reaffirm her own knowledge.

I've had a student who made me learn again by her questions. It makes you think about what you should know, so she's helped me. A student needs the basics, ... but a staff nurse knows more. I make up quick quizzes for example, cardiac, renal, neuro, so I learn with them. Students are easier, but staff nurses are more in-depth so it's more dynamic with them! Nell 51-54

The benefits of teaching specialist medical trainees and the consequent motivation to his own learning that this engenders are also acknowledged here by Dominic.

You are working in an environment where there are trainees, so you're always training people, and in training people you end up training yourself. And they all challenge you, erm, you can't be an effective teacher if you know don't know the subject yourself. Dominic 24-27

This benefit is also recognised by Pippa and Nancy, whereby the teaching of others involved revision of their own learning and the need to ensure their knowledge and practice remained current, and evidence-based. The importance Pippa places on this is emphasised by her repetition of the word 'crucial'.

You do have to read up, don't you? You have to know about evidence and so on, and obviously, that is crucial ... we can't just perpetuate practice which may be out of date. So, you do have to have the theory behind it don't you ... certainly in the practical day-to-day application of your job, I think it's crucial. Pippa 282-290

I think that the fact that you then move on to teaching those [extended clinical] skills to others, and supervising others to do them, keeps your expertise. So, I think you develop in confidence because you're showing somebody else how to do it. [You] have to keep up to date as well because you've got to give them the most up to date information about policies and guidelines and all the other things that have changed over time.

Nancy 70-74

They are both very focused on practical, clinical interventions, but also apply research findings and the best and most current practice to the teaching of others.

Whilst the following comments, again from both Pippa and Nancy, are not explicit examples of their own learning as such ...

I will try and give ... many opportunities for informal learning ... The junior pharmacist went on the ward round with the pain team, and that sort of informal just watching what other people do, and I suppose like we were talking before about the patient being the learning tool ... she learned about pain control in children through that, so yeah, I think that's probably the most valuable way of learning. Pippa 271-275

And I think I probably try to send more junior nurses in to do things like that [when the medical staff are interviewing parents] so they get that opportunity – I think I'm more aware of the fact that that is a good learning opportunity for them. Nancy 144-146

... this demonstrates that an understanding of the mechanisms and benefits of WIL can be used to support the professional development of others.

Reflection and application of learning

Nancy identifies that reflection on clinical experience is an ongoing mode of learning.

A lot of that is experience and reflection I think on how you managed events incidents, people whatever it is, there's always the day when you go 'that went really well, I must remember that for another time' or 'that was really bad I won't do that again' and I think that's very much experiential learning isn't it? And it follows you along, you learn by that. Nancy 107-110

As does David here, where he evidences the critical reflection that occurs during his clinical practice. This also demonstrates his continual questioning and self-assessment of his decision-making.

I'm very conscious that sometimes when you see patterns you misapprehend them, ... one of the thoughts I've always got in the back of my mind when we get children in is 'have we got the diagnosis right?' It's not just when we [admit the children], it's throughout their course – are we missing something? And the other thing that's important is if you've got an idea of what the pattern should be in your own mind, then if children aren't responding to treatment, for whatever reason, you've made the wrong diagnosis, or you've got the wrong treatment, or you've not got enough of the right treatment, whatever, if you know the pattern you're looking for then you recognise that they're falling off the trajectory they should be following faster than someone who's not looking for those situations. David 165-178

Abigail also refers to the importance of 'pattern recognition', and how this has deepened in response to her reflective practice.

I think the skill set does change because you get more adept at pattern recognition, ... then you know from your learned experience that what happened before, ... it's either worked well or it didn't work well, or when you've seen this problem before there were other things that you found out later you should have done at the time and you remember and think 'oh, I should have looked at the whole picture'... so it's probably speeded up my clinical decision making. Abigail 38-44

Dominic's critical analysis of the role of reflection on his learning raises important questions relating to how this is expected to be evidenced to demonstrate learning, as opposed to how he uses such reflection personally.

So, do we document or record for reflection? ... I think when we synthesise things it's always been vocal/oral ... I think reflective stuff is about sitting down and writing by yourself in a dark room and I think the nature of the environment in which we work is different. The strength of our practice – discussion, handovers, ward rounds, colleagues having been on call you know. Your patient - the next day check and pick up what do you make of this, what would you have done? I think we do all of that, lots and lots, but it's kind of oral, it's verbal ... it's an oral tradition, that's the nature of what we do. Dominic 164-169 & 171

Dominic is very definite about what he gains from vocalising his reflections as opposed to writing them in private, as a solitary endeavour.

I think it's the strength of our community. And I'm not talking just about the consultants, I'm talking about [the MPT] I think that's the strength of the environment, and there's a lot of that kind of interaction and reflection and I honestly think that making it more documented would actually inhibit it with me. I think it's sometimes like when people do an examination. You have to learn the examination to pass and it does help you in practice but in fact it's like a different game. Dominic 196-197 & 195-197

He is clearly an acutely reflective practitioner, whereby his reflective learning is developed through discussion in the workplace setting. This is referred to later and in more detail within the subordinate theme Professional Discourse.

In summary

In their role as clinicians, some may have actively chosen this specialism for their career path, whilst others found it by accident rather than design.

Their identity as a clinician, the focus of this sub-ordinate theme, influences their experience of WIL in a range of ways. The interest which this clinical setting engenders influences the continued learning of participants, who speak of high levels of interest and continual motivation in their work, which in turn motivates the learning of Dominic, David, Abigail, Debs, Angela, Nancy, and Pippa.

There are specific circumstances which influence WIL. They demonstrate a professional approach to clinical practice, and to the need to support others in their learning. The opportunities to teach and facilitate learning are identified as contributing to their own continued learning by Debs, Nell, Dominic, Pippa and Nancy.

Reflecting on their clinical roles in support of their learning is noted by Nancy, David, Abigail and Dominic. Dominic also considers that this critical reflection is exhibited by the wider MPT as a whole.

6.5.2 Identity as an expert - sub-ordinate theme

***'[Expert?] no ... once you believe that you're good at it, then you become not good at it, you're constantly trying to become better.'* David 50.**

This expert title or description is important and relevant, as I identified the participants as 'experts' in preparation for this study, by virtue of their qualifications and roles. The ways in which they described themselves as experts varied across a continuum, as they qualified this self-description. The emergent themes supporting the *Sub-ordinate theme: Identity as an expert* are shown in table 6.6.

Some agreed with this persona, whilst others felt this was apt in certain circumstances e.g. in specific areas of practice, but not all aspects of their practice. Participants often related their responses to the complex and varied nature of this specific workplace, such that if you need to learn a new skill or treatment modality then learning can involve returning to being a novice, or an earlier stage of development. Whilst showing a reluctance to describe themselves thus, other participants agreed that colleagues might nevertheless perceive them to be experts.

This leads to the possibility of being an expert team rather than expert individuals, which may be a further reason for a reluctance to self-describe as an expert. The common factor – however participants described themselves – was that this informed their continued learning and could demonstrate how the workplace influenced and supported this process. Even when self-identified as an expert (with whatever degree of qualification) participants strongly suggested that this did not mean that continued learning and development were not still important. The standard of practice they aspire to is ever higher. Working closely alongside experts as colleagues gives the opportunity to compare themselves to fellow professionals and motivates them to maintain high levels of expertise, as well as this motivation coming from the needs of the children. These features drive learning in a productive (not destructively competitive) environment. The emergent themes supporting the sub-ordinate theme: Identity as an expert, are depicted in Table 6.6.

Emergent themes	Sub-ordinate theme: Identity as an expert	
Identifying as an 'expert'	Nell	<i>I don't think of myself as an expert 27-28</i>
	Natasha	<i>No, not at all! 72</i>
	Angela	<i>to my mind an expert is somebody who knows all the time 389</i>
	Abigail	<i>I probably have some expertise in some areas 66</i>
	Nicole	<i>it's just the word expert that I find difficult, but I think you have to be highly skilled in what you do 80</i>
	Natasha	<i>In certain areas I would consider myself quite well-knowledgeable - other areas definitely not 79-80</i>
	Nancy	<i>from the time I took on band 7 [a role descriptor] I've considered myself a clinical expert 58-59</i>
	Debs	<i>I wouldn't go for expert opinions, but... I think I'm OK in what I'm doing 20</i>
	David	<i>you're constantly trying to become better 60</i>
	Dominic	<i>Yes, [laughs] ... I think we are experts in what we do to be honest 124-125</i>
Definitions of 'expert'	Nicole	<i>If expert's about acknowledging the fact that you don't know something, you know where to go to ... 156</i>
	Natasha	<i>You can't be an expert on everything</i>
	Nancy	<i>It's like street cred. isn't it? 240</i>
	Angela	<i>it'll take a while before I'll be happy to call myself an expert no matter what anybody else says, just because there's so much to learn 432</i>
	Abigail	<i>I suspect it's subjective on the observer, depending where they are in the pecking order 72</i>
Expertise as a journey	Pippa	<i>I became expert, certainly more that expert 51</i>
	Angela	<i>Constantly thinking 'What am I going to forget? What haven't I thought of?' and I suppose in a way that makes you better because you're more alert and aware 391-393</i>
	David	<i>Is experience part of being an expert? Yes 73</i>

Table 6.6: Emergent themes supporting the Sub-ordinate theme: Identity as an expert

Identifying as an 'expert'

The extent to which the participants self-identified as an expert was variable. Most of the nurses, the two ANPs and the pharmacist all expressed a reluctance to define themselves as experts, for varying reasons.

I don't think of myself as an expert. Nell 27-28

When I started off I wasn't an expert at all ... I probably used to ask more questions than I answered. Pippa 42

Natasha's initial response was clear and to the point.

No, not at all! Still don't. Natasha 72

Angela's response is similarly brusque.

God, no [laughs] I suppose, really, that's a bit of self-deprecation but to my mind an expert is somebody who knows all the time. Angela 388-389

And Abigail also seems to think of it an aspiration.

I don't think I'll ever see myself as an expert because I always think that somebody probably close to the point of being retired and having a huge amount of time built up all this expertise ... I probably have some expertise in some areas, of things I've done a lot of, ... I'd be loath to call myself an expert really ... people that I look at and think that they're expert in how they work, I don't quite see myself as at that level. Abigail 63-67

Abigail is willing to claim expertise in some areas of practice, and for Nicole, this is dependent on what the definition of 'expert' might be.

I don't think I'd call myself an expert even though you'd have that in your job description – 'clinical expert' because I don't think you can ever know everything, and that to me is what you think of being an expert is – it's someone that knows everything, and I don't think you can attain that in PICU because it changes so much. But it's about having that core knowledge, and obviously your skills have to be higher – you have to be able to teach those skills and you have to be near enough an expert to teach them, so I think it's just the word expert that I find difficult, but I think you have to be highly skilled in what you do. Nicole 73-80

And Natasha feels this need to qualify where her expertise might lie.

In certain areas I would consider myself quite well-knowledgeable - other areas definitely not. Natasha 79-80

However, not all the nurses were reluctant to call themselves an expert. Nancy is the exception here, maybe due to the importance she places on her clinical skills, and her role in the management of cardiac patients.

I think from the time I took on band 7 [a role descriptor] I've considered myself a clinical expert. Nancy 58-59

The doctors were more willing to describe themselves as experts, although all qualified this term in more detail. For example, Debs responded that

Yeah ... I'm a specialist in PICU, and, yeah. I wouldn't go for expert opinions, but... I think I'm OK in what I'm doing. Debs 19-20

David's qualification to this question was deeply reflective, not only in relation to his level of expertise, but that of his colleagues also.

Once you believe that you're good at it then you become not good at it, you're constantly trying to become better ... you've always got to think, ... Did I do well? And by and large most people who work in PICU are perfectionists who think they could do better, or even ... you wonder if you should've done it differently. So, do I think I'm a clinical expert? I think I'm at least as good as the next person. Do I think I'm good enough? Yeah, I'm good enough, but you just want to get better. ... When I hear what other people do, I'm always critical, but I'm no less critical of what I want to do myself. David 59-68

Dominic felt able to agree to the description of himself as an expert, with a certain degree of humour. He also commented on the expertise of his colleagues.

Er, yes! Yes, [laughs]. Yes, I do, yes, we are experts, yes, I think we are experts in what we do to be honest, and I think we're very good in what we do to be honest. Dominic 120, 122 & 124-125

And he was eager to include the team in his description, and add further emphasis in his repetition of the phrases 'we are experts' and 'to be honest'.

Definitions of an 'expert'

The extent to which some participants felt able to define themselves as 'expert' was largely dependent on their own definition of the term. Nicole emphasises her definition of an expert, re-iterating some of what she said earlier, and acknowledging and recognising the particular skills and experiences of different nurses.

That's what I mean about being an expert because I think there's so much, you can't know absolutely everything. But if expert's about acknowledging the fact that you don't know something, you know where to go to ... you can't know everything it's impossible. I think everyone has skills, and it's about recognising who has those skills within your team isn't it? And knowing who to go to. Nicole 154-160

Nicole emphasises her point by her repetition of 'you know where to go to' and 'you know who to go to'. This was similarly echoed by Natasha who used similar terms to qualify her response, regarding the difficulty in being an expert in this setting.

You can't be an expert on everything. I can certainly be a signpost and direct people, you know, where to find the resources and I can access information for them, but no, when it comes to something like ECMO [managing the heart-lung by-pass machine], no, I'm not an expert. HF [haemofiltration - managing renal replacement therapy and supporting renal function], that I can do. Natasha 80, 82-85 & 87

Nancy, who was more comfortable describing herself as an expert, here explains where she has such expertise.

A lot of my clinical skills are based around chest drain removal, cannulation, weaning, ventilation and extubation and all of those sorts of skills. Nancy 69-70

... and her rationale for her acceptance of this description.

The [Specialist practice postgraduate nursing students] quite often come and ask me to be their ... mentor, ... but I think that's based around the fact that they see me taking out the drains, putting in the cannulas, weaning the patients, extubating the patients and having a working knowledge of what we're doing. It's like street cred. isn't it? 'That band 7 actually knows how to look after a patient, so I appreciate she's a clinical expert. Nancy 235-238 & 240-241

Nicole identifies a concern she has regarding expert practice – that for this level of ability, there is a need for opportunities to develop and maintain specific expert skills.

I think the size of the team, when we moved from being a small unit to a bigger team, that was quite difficult, ... I think that's one of the fears, that they'll eventually want us all to work at the same level, and I don't think that's a good thing. Because I think you dilute the skills too much and you don't have experts in particular areas ... You know how we've always had someone that's been the person you go to about [X or Y] ... and I have seen that gone – that's something we don't tend to do, we don't have these specialist teams within our big team anymore ... We don't have those little groups of people that were specialists in each of those little areas that you could go to. Nicole 198-209

The definition of an expert, and expertise, is identified by some as a judgment to be made by others rather than oneself. Nell and Nicole agree that fellow colleagues might be more willing to describe them as such.

But maybe others would? I still see myself as learning. Nell 27-28

I think so, yes. Nicole 81

Angela gives an example of this dichotomy, whereby she identifies why other colleagues see her as an expert.

I think it'll take a while before I'll be happy to call myself an expert no matter what anybody else says, just because there's so much to learn. [But] unfortunately, or possibly 'um, fortunately, I think they do [think of me as an expert]. I know because twice in a row I had registrars come to me, ... and say 'so I've got a baby that's ready for extubation [removal of the endo-tracheal tube, which enables the patient to breathe unaided without the support of a ventilator], and [Consultant X] said I've got to have an expert with me when I do it, so they suggested you.' ... so, I suppose they do. Angela 432-433 & 409-414

Whilst here Abigail recognises the possible subjectivity of the descriptor 'expert'.

I suppose it's probably subjective because if you were very junior and new to the ICU somebody might look at me and say 'oh, she's an expert' but somebody working alongside me at the

same level as me, or one of the ICU specialist trainees might not necessarily see me as an expert ... I suspect it's subjective on the observer, depending where they are in the pecking order. Abigail 69-72

Expertise as a journey

Expertise was referred to more often as a journey rather than a destination. In Pippa's case her responses demonstrate not only an increasing confidence, but the opportunities to develop her expertise.

I suppose that you know those sorts of discussions where you're thinking 'What is the most important thing at the moment?' I suppose helps me to [develop] that expertise. I became expert, certainly more that expert. Pippa 49-51

For Debs, although she had initially felt comfortable in describing herself as expert, similar to Pippa's experience, there had been a journey to get there.

When I was here when I first started I was worse than an SHO, I was like a house officer, and I knew nothing, I couldn't do anything, I didn't understand the machines, I didn't understand patients, ... and obviously that changed. Debs 24-27

Angela refers to a conversation with a more experienced colleague, during which she shared her doubts regarding her own level of expertise.

I would say [Colleague X] is an expert and yet I was speaking to him last week, and I just said ... to be honest there are many times when I just think 'you've given me this – I don't know what to do next' ... How long does that feeling take to go away? And he said 'Well not really ever Just constantly thinking 'What am I going to forget? What haven't I thought of?' and I suppose in a way that makes you better because you're more alert and aware, you don't get into a rut of thinking and I would hate to do that – fall into the rut of thinking I know what to do, because you don't. Angela 389-397

Although these doubts might appear to be overwhelming, having had this conversation, she then speaks of them in a positive way, as a means of preventing complacency, and as a driver for continued learning. This resonates with a comment of David's identified earlier, whereby he described people who work in PICU as perfectionists. Here he recognises the importance of experience in gaining and maintaining expertise, not just as time related.

Is experience part of being an expert? Yes. ... I think there's an awful lot of clinical diagnosis that you make by just knowing what they look like; by having seen them before ... one of the problems there is that you then have people who are resistant to change, because they say 'in my day' or 'we've always done this' etc. and there may be good reasons to keep on doing what

you've always done, but there may be bad reasons not to keep on doing what you've always done before... but miles on the clock I think are vital. **David 73-84**

He also speaks in terms of attitudes and openness to change; the need to be discerning in the use of such expertise to recognise what should be reformed and what should be maintained.

In summary

Participants identify and can debate and qualify the extent to which they describe themselves as experts. Doctors were more willing to describe themselves as such. The nurses, the ANPs and the pharmacist were reluctant to do so, with the exception of Nancy.

Regardless of the ease or reluctance in which they adopt this title, they appreciate that others perceive them as having such a role within the MPT. The need to maintain this level of practice was evident, and particularly noted by Pippa, Debs, Angela and David as a continuing journey, and less so as a destination.

Expert, as defined by knowing who has certain strengths within the team was mentioned by both Nicole and Natasha. Dominic, whilst acknowledging his own expertise, referred to the wider team as experts.

6.5.3 Identity as a member of the multi-professional team - sub-ordinate theme

***'Everyone pulls together really well, we all look after each other.'* Natasha 25**

Within this theme participants consider their experiences of being a member of the MPT member and how this identity influences learning. The emergent themes supporting the *Sub-ordinate theme: Identity as member of the MPT* are featured in Table 6.7. Belonging to this team has an impact on the culture of practice and the culture of learning – the learning environment. There is the need not only to learn individual practices, but also to develop different ways of working together. Team membership motivates staff to maintain and improve practices, and encourages personal growth.

The participants are representative of the professions who make up the MPT – doctors, nurses, Advance Nurse Practitioners and the Allied Health Professions. Staff have worked on the Unit for between 8 and 29 years, so they know each other well, and identify the motivation and job satisfaction that comes from working in such a team. The work on the

unit, the team, and being a member of this team, is important to participants, and their self-identity. This culture and supportive learning environment motivate and has supported their learning and development, both individually, and collectively.

Knowing and understanding their place in the team does not appear to be in a (potentially) negatively hierarchical way, but in a similar situation to team sports whereby a player knows the game plan and their position, so they can contribute effectively and with strategy. Practically speaking, this is evidenced by helping each other, and knowing who does what, and who can do what. Psychological support and camaraderie are similarly important.

The team is spoken of as a positive and inclusive experience, with specific examples of its strengths and how it works together.

Yeah, we do do more than we think, and it is a good group and a good team, and everyone helps each other. Natasha 208-212

The contribution to learning may be implicit or explicit. This theme relates to the personal impact of belonging to the MPT. The specifics of learning from fellow colleagues is discussed within the superordinate theme 'The Clinical Workplace.'

The influence of team culture on learning

Pippa's experience of the team culture is a positive one, and one that she very much welcomed.

I don't think I ever expected to be as involved with the team ... I always wanted to do hospital pharmacy because I would be part of a team, but I don't think I imagined I would be part of the team to this extent. ... I worked somewhere else for about 18 months, but I wasn't anywhere near as involved [there] so I don't know if that's special [to this Unit]. Pippa 261-264

The PICU can be an unpredictable and stressful workplace. For nurses Nell and Natasha, they give practical examples of how positive and supportive teamwork is evidenced in everyday practice.

When we work as a team, if there's an [unexpected/emergency event] everyone descends on the child, there are no breaks, we all help, and when we work as a team we work well. There's good camaraderie most of the time. Nell 10-11

It's a proper team, we all work so well together, and you can see that in times when we're really busy or there's a horrible stressful situation – everyone pulls together really well, we all look after each other. Natasha 21 & 23-25

Emergent themes	Sub-ordinate theme: Identity as a member of the MPT	
Influence of team culture on learning	Pippa	<i>I don't think I imagined I would be part of the team to this extent</i> 262
	Nancy	<i>When we work as a team we work well. There's good camaraderie most of the time</i> 11
	Natasha	<i>Everyone pulls together really well, we all look after each other</i> 25
	Dominic	<i>I think we have developed an esprit de corps, a strong team environment</i> 67 [and] have mutual respect for expertise and skills 152
	Nell	<i>There's always someone to ask and you know who to ask</i> 12
	Abigail	<i>the team is ... it's wanting to be better and that's aspirational</i> 108
	David	<i>On the ICU we can have a robust debrief</i> 272
Belonging to a team	Pippa	<i>each person has their own individual role but we all work together</i> 15
	Abigail	<i>You feel like you're valued in the team</i> 28
Knowing and understanding roles and responsibilities	David	<i>I hope [nurses] would say I'll always listen to what they've got to say</i> 307
	Debs	<i>The ECMO nurses are actually better at it than I am. They know a lot more</i> 90
	Nicole	<i>Everyone has skills, and it's about recognising who has those skills within your team isn't it, and knowing who to go to</i> 159-160
	Natasha	<i>We do try and do interdisciplinary teaching ... you get to understand each other's roles</i> 97

Table 6.7: Emergent themes supporting the Sub-ordinate theme: Identity as member of the MPT

And when asked, by way of clarification whether this was the nursing team, Natasha clearly explained that such teamwork was wider than her professional group.

It's the multidisciplinary team. **Natasha 26**

She goes on to explain the way that this impacts on the learning culture within the Unit.

I think there's always been a good learning culture to be honest, ... I think it goes through peaks and troughs depending on how busy we are, but I think on the whole there's a good learning culture on PICU and I think there has to be. You know, we're all in a high pressure situation ... and I do think there's a great encouragement from management to learn, ... and the consultants are really supportive. **Natasha 171-177**

Dominic is equally keen to demonstrate the importance of the wider MPT in promoting and encouraging continued learning.

I don't like the concept of the [purely] medical team, because I think there are a lot of people who push us on, frankly, there are doctor colleagues, I think physios, pharmacists and nursing staff who are all pushing us. **Dominic 31-33**

Dominic expands on this importance and identifies the team's strengths due to its supportive nature.

*I think in our environment we're fortunate, that in the structure, ... and I suppose in the kind of work effort, I think we have developed an esprit de corps, a strong team environment. **Dominic 66-67***

Its supportive nature, and its level of achievement is also recognised by Nell.

*It's a good Unit, and gives excellent care, and you need a range of knowledge. There's always someone to ask and you know who to ask. I know we moan and there are issues, but the best thing is that there's always someone to help. **Nell 10-14***

Within the team, there is recognition for continuous improvement, and subsequent learning. Abigail, David and Dominic identify the team's aspirations and ability to self-assess.

*I definitely do think it's one of the things I like about it here. ... the team is... it's wanting to be better and that's aspirational ... if things go wrong, people are wondering 'How did it happen, we can't let it happen again.' **Abigail 107-109***

*On the ICU we can have a robust debrief about those sorts of things and recognise that we haven't done things well and recognise that we've done some things well, and there's things we need to change and things we need to reinforce. **David 272-275***

*The other thing is I think is that the team of people you work with and the structure of how we do it, people challenge other people about what they are doing. **Dominic 24-25***

Just as there is a degree of fluidity to patient needs, there is a continuing dynamic at play when considering the structure of the MPT. There are over 250 staff in the wider clinical team, with a degree of turnover amongst the permanent staff, and the rotating medical speciality trainees. Such movement is far less apparent amongst the most senior team members. This allows opportunities to share ideas and practices from elsewhere, and is welcomed by the senior clinicians.

*I think the other good thing for us is because we have a number of people rotating through, coming through, people from the adult intensive care units, people just coming from other places, people who go away and work in other places and then come back. Then people will say, well in adult ITU's we might do this, and we say 'We see where you are coming from, this is why we do it this way, we do it differently? [Or] 'Well that's a good idea, why don't we do that? And they go to other parts of the world to work, and come back and give their input, and say we're not much different from others, and that's reassuring that we're pretty much the same. People go to conferences and they come back and say what they came across, and I think we may be better off than in some departments and in other places in as much as we've always had that kind of interaction. **Dominic 77-88***

Dominic's use of the term 'our kind of people' in his next comment is an interesting phrase. This could imply that staff are recruited and appointed on that basis, or that staff remain working in the Unit because they fit this description.

I think what also helps is that I think our kind of people have mutual respect for expertise and skills so what works in an environment is mutual respect and acknowledgement and acceptance of skills and insight. Dominic 152-154

Dominic is cognisant of the different ways in which individuals contribute and bring expertise to the wider team, and he critically reflects on the possible reasons for this specific aspect of team culture that has developed over time.

I think we have that kind of similarity, ... and maybe we think we're all kind of similarly minded, but maybe what happens is that we become that way ... a kind of synthesis of thought pattern and that's why we pretty much end up thinking in the same way, well, not always ... maybe it's the environment that's done that? Maybe it's not all because we are like-minded, but over years and years of discussion we have worked out ... maybe that's ... 'it'. Dominic 104-107 & 110-117

Belonging to a team

Feeling a valued member of the team, seeing how your role contributes to the overall work of the Unit, is a powerful motivator. Pippa feels this is stronger in this specialist area of practice as opposed to more general area. In her experience, her role and its contribution are more tangible.

I think it's the team - we're very much part of a team each person has their own individual role but we all work together ... I suppose on some of the other wards you see all the patients, but you don't see yourself as important in getting the patient better ... it's very satisfying. Pippa 14-15 & 17

A possible reason for this may be identified by Pippa and Abigail, here.

They [the MPT] were always grateful. There's always lots of questions 'erm which you don't get on other wards so 'erm you're constantly being asked for your opinion on stuff. Pippa 23-24

You feel like you're valued in the team ... when you come to work people are pleased to see you and value your input, so that's got to be good in any job. Abigail 28-30

Whereby both refer to the concept of opinions and input being valued.

Knowing and understanding roles and responsibilities

Determining roles and responsibilities can mean actively acknowledging where one's contribution sits, or learning to work in different ways within a team. This shared understanding is described and acknowledged here by David and Debs.

[Nurses] who've spent a reasonable amount of time on ICU ... most of them have got quite a good grasp of what's going on... I hope they'd say I'll always listen to what they've got to say. I might not do what they tell me to ... [If they say] 'I don't think we should do this', I'd think long and hard about doing it, and especially if I couldn't say to her 'I wouldn't choose to do this, but it's because of that or the other or this is the only way I see out of this situation ... in that way I don't think the relationships have changed that much. David 306-312

I think there has because for example with the ECMO team ... the ECMO nurses are actually better at it than I am. They know a lot more about [managing] the ECMO patient than I do. I think there are certain groups of nurses certainly that have advanced more in terms of their knowledge and in terms of looking after patients than they used to. Debs 89-95

Nicole identifies the challenge of 'not knowing' but then the benefit of being in a team where knowledge and skills are distributed.

You can't know everything it's impossible, I think everyone has skills, and it's about recognising who has those skills within your team isn't it? And knowing who to go to. Nicole 158-160

Natasha identifies a further aspect of working and learning together, as part of the wider team. Although this example is of a more formal learning opportunity, these are organised by members of the MPT, and have an ongoing impact on working and learning together in the clinical setting, as she describes here.

We do try and do interdisciplinary teaching, ... You get to understand each other's roles better now, and I think erm when someone from their discipline is teaching you, you get to understand their discipline better but also the person a lot better, and you get to know them. Natasha 97-105

She feels that a (possibly) unintentional effect of this is the greater understanding of people's different roles, and of course, of the individuals themselves.

Angela's role has changed from that of experienced nurse to ANP. I asked her if she has had to learn to interact with staff in different ways.

I think probably yes. You know the structure ... the responsibility stops with the consultant but the ANP or the registrar is the intermediary and you are responsible for that patient's well-being while they're under your care on your shift and you have to speak more directly I think with the nurse. Angela 314 & 322-324

David reflects back on earlier times and different settings, identifying the benefits of good working relationships across the team.

One of the good things about PICU, most people are highly motivated do good care, ... it's an area where people work hard, and that's true of the nurses as well I think, or at least ... nurses who choose to stay, stay because they're motivated to stay. One of the really nice things is virtually all of them are really good, motivated, bright, know what's going on, helpful, and ... it's a really nice place to work. I've not noticed it so much [here], but I remember when I was training, there'd be almost open warfare between doctors and nurses, but I didn't get it – they should have been on the same side. David 280-288

By their overall responses of their experiences, the team in question provide evidence of being on the same 'side'.

In summary

Participants identify their experiences of the positive team culture in which they work. They evidence a culture which supports each other in practice, demonstrates how their different skills and knowledge are valued and appreciated, and how these contribute not only to providing good care but as a means to encourage and support personal and team development.

Not all participants spoke of the impact that membership of the MPT had on their learning. It was not something that Nancy identified. For the other participants, they recognised the influence of team culture, the positive aspects of feeling part of a team, and knowing and understanding roles and responsibilities as impacting on their learning.

6.5.4 Identity as a lifelong learner - sub-ordinate theme

***'It's the type of job where you can't sit on your laurels.'* Nell 18**

The term 'life-long learning' is specifically mentioned by some and eluded to in a more implicit way by others. These emergent themes supporting the *Sub-ordinate theme: Identity as a lifelong learner* are shown in Table 6.8. When participants described how they had learnt to be that expert clinician, or clinician with a certain level of expertise, this was also (in some

way) a means of demonstrating how they had learnt to learn in practice, and continued to use those strategies to maintain and develop practice.

These participants have openness to continued learning. Since participants indicate that in their experience the requirements for practice are fluid and dynamic, then life-long learning is prerequisite. Participants identify that working as a clinician on the Unit engenders lifelong learning, not just encouraging but almost demanding it.

Nell explains it as

... the type of job where you can't sit on your laurels. Nell 18

Pippa described how she learnt how to apply theoretical knowledge to actual practice, learning to be a pharmacist in the PICU.

In the early days you were just learning every day ... 'erm, new ways of using the same drugs and also coming across new drugs that I'd never come across before so there was a lot of 'erm new knowledge that you were gaining very regularly. Pippa 25-27

And Nell has a very strong sense of identity as a life-long learner. Work and learning are closely integrated in her experience, but also is the concept of finding learning opportunities in a variety of situations.

You learn all the time, or re-learn for me! You can learn every day, education is all around us. You can even learn some things from Morning TV! Nell 16-19

She emphasises this later, reinforcing learning as an everyday occurrence

Learning is done every day, ongoing, not formal just there all the time. Nell 59

Emergent themes	Sub-ordinate theme: Identity as a lifelong learner	
	Nell	<i>The type of job where you can't sit on your laurels 18</i>
	Pippa	<i>Particularly in the early days you were just learning every day 25</i>
Recognition of learning opportunities	Nell	<i>You can learn every day, education is all around us 18</i>
	David	<i>I think you can learn pretty much wherever you are 123</i>
	Angela	<i>I would consider myself to be a lifelong learner 18</i>
	Natasha	<i>The fact that you're continually learning, continually evolving is the best thing 21</i>
Commitment to learning	Dominic	<i>Different options change so you have to keep yourself updated and up-to-date 23</i>
	Debs	<i>You should read up about something new every month 66</i>

Table 6.8: Emergent themes supporting the Sub-ordinate theme: Identity as a lifelong learner

Everyday learning is something which David also experiences, inside and outside of work, where he, like Nell, identifies several sources. He expands on this concept here, in which he demonstrates an on-going curiosity to life in general.

You learn by watching other people, you learn by – I hate the word – reflecting, on what went before, you learn by thinking about how you performed and working out whether you could have done better, ... you learn by watching TV, you learn by reading books, you learn by going on courses and often I think I learn by seeing something in a different situation, and just feeding back onto what I'm thinking about from work or wherever. I think you can learn pretty much wherever you are ... it's just interesting to see who is doing what. David 112-118 & 123

Angela readily agrees to such a description

I would consider myself to be a lifelong learner. Angela 18

Whilst Abigail suggest it is important to be

learning all the time from what you've done. Abigail 47

Natasha recognises and reflects on the impact of critical care work practices for the nursing staff, regarding opportunities for new learning and the reinforcement of previous learning.

I've been here since 1998, and there's never a day goes by that you don't learn something. It is the ongoing learning that keeps me here. To me, the fact that you're continually learning, continually evolving is the best thing. Natasha 14, 18, 20-21

Natasha later reiterates her phrase 'continually learning' and identifies the specific ways in which for her this workplace learning can occur.

Well yeah, it is because you are continually learning at work. So, you're learning at the bedside, you're learning from your peers, and the medical team and the physios and the pharmacists, you're just continually learning as you go along ... whatever patient you've got there'll always be something different than the last patient [even] if you've got the same conditions, so you're continually learning ... with the variety of ages and conditions, we're in a good position to just continually learn. Natasha 62-67 & 148-149

Similar views are echoed by Dominic and Debs. For Dominic, this way of learning and being is as fundamental to his clinical practice as is the need to maintain currency, by his emphasis of the phrase 'keep up-dated'.

I think the concept of learning from one's own experience and learning from other people's experience, and kind of networking and interacting with colleagues at work and in other places is actually much the same, it's just that different options change so you have to keep yourself

updated and up-to-date. ... I think the message is that we have to keep updated otherwise you can't do what you do involving treatment modalities. Dominic 18-21 & 23-24

And for Debs, she gives an honest account of what she aims to do, but doesn't always achieve, as her commitment to lifelong learning.

[You see] something new every month at least as I said, so you literally should, I don't always do, but you should read up about something new every month. Debs 65-66

In summary

These participants, Nell, Pippa, David, Angela, Natasha, Dominic and Debs, identify an openness to learning – both specifically related to their clinical practice and in their everyday lives. They recognise life-long learning as a necessity for their continued practice and also as a positive attribute to embrace.

Overall summary of the findings.

This chapter identifies the participants' experiences of learning in the workplace, and the extent to which they find this setting a source of continued learning. What impacts on the content of such learning is identified in the Master theme – 'The needs of the child and family in PICU.'

Within the Super-ordinate theme 'Self-identity' participants speak of how their role as a clinician continues to be interesting and motivational which influences their learning. Commitment to the teaching of others is identified by most as an additional source of their own learning. The extent to which they identify as an expert varies, but however they qualify this, the need for learning remains important, as it is influenced by the changing workplace context. A smaller number of individual participants referred to the concept of lifelong learning. Those who did so embraced it as a positive attribute, both inside and outside of work. The impact of membership of the MPT was specifically identified as having a positive impact on their learning by almost all the participants.

The Super-ordinate theme 'The Clinical Workplace' includes activities relating to Clinical Practice and the opportunities to engage in Professional Discourse. Clinical Practice enables participants to do just that – practice and enhance their skills, and to continue to learn from patients. The physical environment supports continued learning due to the proximity of other colleagues, as a means to making their activity visible and observable. Professional discourses are experienced informally and formally, as one-to-one conversations

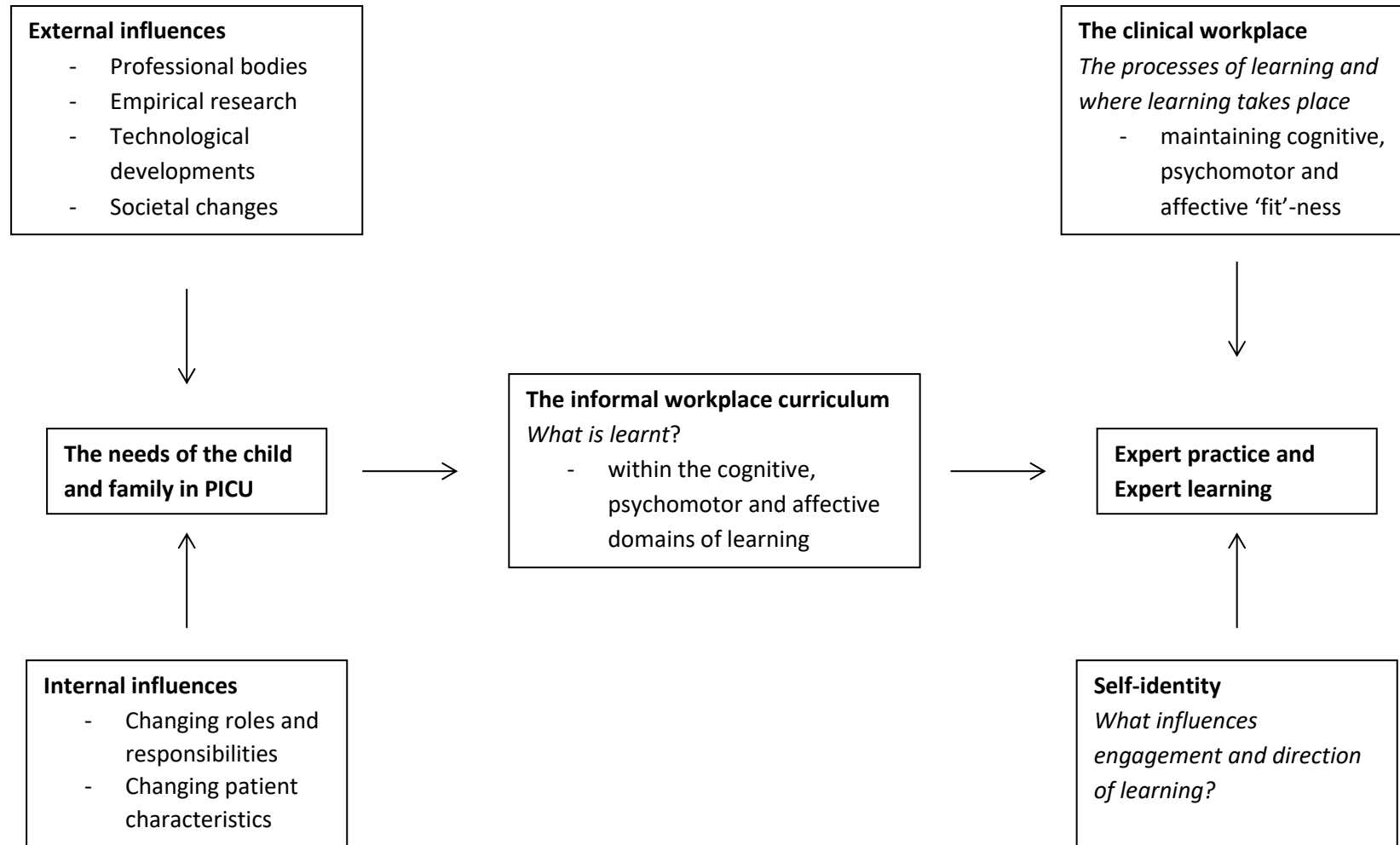
and clinical meetings. The extent to which participants find that these situations capitalise on learning outcomes show wide variation. That said, even when individuals cite scope for improvement, it is because of the identified benefits of such discourse. The following chapter will critically analyse these findings with respect to the theories and concepts identified in Chapter 2, and the previous research findings in the Literature Review, Chapter 3.

Chapter 7: Discussion

If the curriculum can be defined as the 'course to be run' (Billett, 2006) then these experiences of workplace learning can be construed as the means to maintain 'fit'-ness - cognitively, physically, and by the maintenance and actualisation of the 'self'. Within the context of the expert practice of clinicians, the course does not have a finite end, so there is need to cope with a dynamic course content and direction. There is complexity within this clinical workplace – interconnections between not only the personnel, but the clinical activities, the physical 'tools of the trade' and indeed its own historical and cultural context. Learning within the affective domain supports this sense of 'self' - constructed differently for each individual, and in effect is supportive of the team, hence being not only able to cope with the uncertainty of a changing curriculum, but also longevity over a career path. Other contexts might be constructed in different ways, and require and provide alternative ways of maintaining this holistic fitness. The utility of IPA as a research methodology gave participants the opportunity to articulate their experiences of the workplace as an important means of supporting their continuing learning.

The findings identified within the themes are interconnected and portrayed within Figure 7.1 – depicting a model of expert learning and working. This shows how internal and external effects acting on the context - in this case the needs of the child and their family – influence the informal workplace curriculum. The clinical workplace - as both a learning and working environment – supports continued and responsive cognitive, psychomotor and affective 'fit'-ness. In parallel with this, the self-identities of the participants influence the engagement and direction of their continued learning, the outcomes of which are expert practice and expert learning. The justification for this model is articulated within this chapter, considering in turn the master theme and the two super-ordinate themes and interpreting the findings from the data through the lenses of professional and expert practice, learning theory and the findings from the critical interpretive literature review.

Figure 7.1: Model of expert learning and working



7.1 The needs of the child and family in PICU drives the informal workplace curriculum

Participants identified the needs of the child to be central to their practice and in effect their continued learning - these needs are key drivers of the informal workplace curriculum. The clinical curriculum can be defined as inclusive to the experiences required to reach intended outcomes (Grant, 2010), however, the informal and dynamic nature of clinical practice renders this definition somewhat imprecise, but not only due to the diversity of patient need. Study participants concur with findings from the literature review and identified that patient trajectories are not always as described in text books (Alcantara, 2013; Abigail **164**; Angela, **399**), that propositional knowledge may be insufficient for the complexity of practice (Smith et al, 2003) in that patients may well have a number of underlying co-morbidities, which learners can find challenging yet beneficial and motivational to their continued learning (Pearson and Lucas, 2011), and outside of the more usual curriculum. This concurrence is particularly note-worthy since these participants all have considerable experience in this setting, yet can still experience and appreciate such challenges.

Specific detail was provided from Natasha, Nell and David as to why this may be the case. Some patients are younger, that is born and admitted at a more premature gestation; older, due to changes in patient pathways for the young adult with leukaemia; and are 'sicker', since there are more interventions available to support critically ill children, therefore patient characteristics are diversifying. In addition, whilst paediatric critical care is a specialism in itself, the expectation is that 'we do a bit of everything' (Nicole **116**) since children and young people may be admitted to the Unit with underlying illness, trauma or other pre-conditions requiring the input of a range of disciplines. This therefore impacts on the required skills set and knowledge base of this setting, and in addition the need to take into account the potential 'paradigm shift' and short half-life of knowledge (Stupans, 2012), and a frequent lack of a definitive evidence-base noted by David **50**.

Essential learning is required in response to changes in patient characteristics, a feature not specifically noted in the literature, although improvement initiatives identified further learning, both planned and ad hoc (Mylopoulos and Farhat, 2015). Therefore, the content of an expert skill-set needs to be learned, re-learned or re-adjusted in the light of change and is an inherent feature of the informal curriculum. In addition, clinical practice does not take place in a vacuum, and the external culture of the times has influence on the

relationships clinicians have with patients, parents, and indeed each other, not least with regard to ethical decision-making (Huxtable, 2018). This dynamic nature of the workplace curriculum is impacted on by history, culture and its specific situation (Billett, 2016), and has relevance to the behaviours and attitudes required for professional practice, which also impact on the evolution of this curriculum. At the highest level of practice this requires an integration of a value system with consistent practice, displaying professional and ethical standards, and a willingness to accommodate change, which is the highest level of practice within the affective domain framework (Krathwohl et al, 1964).

Formal learning situations, or programmes of study with specific workplace learning objectives would tend to follow a more structured path of learning, and consultants within the literature review were conscious of not having such a structure once qualified (Cuyvers et al, 2016). Lave (1990) considers the 'learning curriculum' as that which is needed to become a full and effective member of a workplace, with pathways of learning, moving from the more straightforward workplace activities to the complex, whilst Biggs (1996) writes of the need for an alignment of intended learning outcomes, learning activities, learning processes and actual learning outcomes. A weakness of this model concerns assessment. If both the curriculum and the learning tend toward informality, that is tacit and unarticulated, then assessment is similarly tacit, and maybe largely dependent on the integrity and self-assessment skills of the individuals.

Given that participants were evidently focused on the needs of the individual child, it is perhaps unsurprising that van de Wiel et al (2011) found learning to be a reactive rather than a deliberate exercise, failing to address the aims of Ericsson et al (1993) to promote planned and 'deliberate practice'. Yet this 'richly pedagogic informal curriculum', to use Billett's phraseology (Billett, 2006 p.26) is already in existence as the day-to-day activities of clinical practice, and harnessed and utilised by the participants in this study. Whilst empirical studies designed and undertaken by non-clinicians can clearly inform practice and give an additional perspective, it is equally relevant to explore individual experiences of clinicians, as evidenced by participants.

7.2 The clinical workplace - Super-ordinate theme – opportunities for learning

The clinical workplace creates opportunities for practicing, refining, learning, revising across all domains of learning – in other words a forum to maintain and develop ‘fit-ness’ across the cognitive, psychomotor and affective domains (mind, body and psyche).

Learning and the workplace

Participants spoke of their experiences, and articulated learning opportunities across a range of situations found within the clinical workplace, and clearly identified the many processes of learning which occurred as part of their everyday practice, including learning from patients, and from each other. There was the simple opportunity to *practise* their craft (Angela – ‘*practise, practise, practise, practise*’ **293**) whether that be clinical skills or diagnostic skills, not least due to the volume of patient throughput (Huggins, 2004; Goldman et al, 2009 and Pearson and Lucas, 2011). These opportunities for repeated practice, occurred across all disciplines, and promote learning (Welch, 2016; Lockyer et al., 2016). There are recognised benefits of learning from continuous interactions with patients (Pettersson et al, 2015), with workplace learning experienced in a positive light by participants, echoing findings from van de Wiel and van den Bossche (2013).

The social aspect of the workplace impacted on learning opportunities, since all clinicians on the Unit, with varying levels of expertise and experience, were practicing alongside each other, giving opportunities for vicarious learning (Bandura, 1977). This was experienced by Pippa, learning helpful ways of interacting with parents, and avoiding less productive ones from her observations of nursing staff. Informal learning can occur from these observations, or from consultation with more knowledgeable colleagues. These conditions are relevant to Lave and Wenger’s Situated Learning Theory (Lave and Wenger, 1991). The less experienced practitioners in what they term a CoP, are supported in their development by those more experienced by way of ‘legitimate peripheral participation’.

The ways of working within the PICU enable it to be described as a CoP, since there is a shared focus, mutual engagement in practice and learning, a sharing of information and a body of knowledge that develops within that group (Wenger et al, 2002). The original research undertaken by Lave and Wenger (1991) focused on single professional or trade groups. Within the context of the PICU there are multiple professional groups (doctors, nurses and AHPs), as well as the overarching MPT. Participants identify collegial input in their learning from their

own disciplines (intraprofessional), as well as the wider team (interprofessional). Within the clinical hierarchy, this can be envisaged as both horizontal and vertical in nature, (Fenwick 2008, and Sawchuk, 2010).

The physical environment

Previous studies identified that the physical constraints of the workplace, or workplace cultures or practices may limit opportunities for learning (Noble and Hassell, 2008; Alcantara et al, 2014 and Gregory, Hopwood and Boud, 2014) though this was not acknowledged as an issue by the participants, potentially due to the physical open environment of the Unit and the numbers of clinicians present day to day, and day and night. In this busy, open environment there were opportunities to watch and hear the practice of others - those within one's own discipline, and also colleagues outside of this professional group – and engage in formal and informal conversations (Bunniss and Kelly, 2008 and 2013; Waring and Bishop, 2010). As Dominic explained - there is 'no place to hide' (Dominic **102**). Physical spaces were recognised as having influence on learning, and Nancy, Pippa, Abigail, Natasha and Nicole all referred to the benefits to learning from opportunities to observe others, by way of vicarious learning (Bandura, 1997). This also aligns with the notion of the calibration of personal practice in response to observing that of others (Watling et al, 2012).

Further examples of this form of learning were noted by Natasha who considered that staff who role model good practice often 'do it unwittingly', though Nicole recognised the potential problems associated with observing poor practice. Copying actions or behaviours without understanding is a lower form of practice, thus supporting the need for active engagement in learning situations – to deepen understanding of good practice and guard against the replication of poor practice. This learning, as understood by behavioural theory (Taylor and Hamdy, 2013) is purely action-focused thus missing the cognitive element of learning. Dependent on what is observed and the resultant outcome, such learning may be described as vicarious (Bandura, 1977), as evidenced by Pippa further developing her communication skills, which she termed as 'osmosis' (Pippa, **194**).

7.2.1 Clinical Practice – sub-ordinate theme

Clinical practice provides the means to maintain and develop practice, valued by participants for its authenticity, reality and timeliness. Increased depth and impact on learning can arise from its taking place within the clinical context, and by having the potential to apply theory to practice, (Tabari and Khomeiran et al, 2007), as Abigail, Angela, Pippa,

Nancy and Nell attested. The nurses and ANPs tended to relate their WIL experiences to the acquisition of new, more in-depth understanding of theory, or the revision of previous knowledge, similar to earlier studies (Pimmer et al, 2013; Pype et al, 2014; and Newton et al, 2015). Experiential learning is applicable to all levels of medical practice (Yardley et al, 2012), but it may have particular importance to the non-medical professionals who are likely to have spent less time in formal post-qualification education (RCN, 2016). The doctors did not specifically refer to WIL as an opportunity to relate theory to their practice, unlike the nurses and Pippa. The doctors, however, identified the extent to which they reflected on, and continually self-assessed their diagnostic and clinical decision-making skills to maintain currency with their practice, thus strengthening mental schema (Ruiter et al, 2012). The concept of praxis – professional wisdom, and the integration of knowledge and its application, is being evidenced in these experiences (Jonsson et al, 2014).

Learning may be enhanced by the emotion of the event (Tabari-Khomeiran et al, 2007; Watling et al, 2012 and Vaughan, 2016), the intensity of their experiences and reflections on specific incidents (Goldman et al, 2009) by the strength of recall and the learning experience (Vaughan, 2016). In Angela's case, being present when a radiologist diagnosed a malignant process deepened her understanding of the importance of fully evaluating a chest x-ray, and Pippa spoke of emotion as having a powerful impact on learning.

Participants also identify that working in this environment often requires 'thinking outside the box' and developing problem solving skills, whether this be due to a matter relating to an individual child (as in managing complex IV therapies noted by Pippa), or the wider issue of what constitutes best evidence-based practice, which David mentioned, all of which are examples of constructivist learning theory (Illeris, 2009). In Nicole's experience, clinical practice gives opportunities to problem-solve and think laterally, aligning with findings from Waring and Bishop (2010), Bunni and Kelly (2013), and Gregory et al (2014). Critical reflection is necessary to prevent false assumptions (Marsick and Watkins, 2001), and detailed discussion, albeit spontaneous, is a valued way to promote this (Bell et al, 2016).

The nature of the work in PICU means that actions and inactions may be more clearly and timely linked, enhancing and strengthening the potential learning, by way of feedback, albeit informal, via the response of the patient to an intervention. This requires clinicians to be conscious of the impact of their practice. Abigail was the only participant to mention feedback specifically. If and when clinicians are informally praised and encouraged in their

practice, or given more formal feedback, then this may influence learned behaviours (Aubrey and Riley, 2015), which has the potential to continue to be relevant, at all levels of expertise. One of the strongest examples of informal feedback was given by Angela, when she spoke of parents returning to the Unit to say, 'we have our child back'. One of the benefits to making implicit learning more visible would be to promote the utility of feedback (Eraut, 2004), thus improving confidence and identifying areas for improvement.

Learning within the workplace may be implicit and spontaneous (Prince and Boshuizen, 2004), also noted by Nicole and Natasha, yet nevertheless integrated into daily practice (Debs, 40). My definition of WIL, for the purposes of this study, included workplace activities some of which could be planned, albeit informally. Nicole was aware of the expectation for teaching to be a classroom activity, yet this need not be the case, as the following example demonstrated - the 'tea-trolley' learning exercise, instigated on the Unit following a conference presentation, which integrated learning with everyday activities including the 'social' element of social constructivism (Vygotsky, 1987). This idea was brought to the Unit via conference proceedings, which demonstrates the Unit as being a Community of Practice (Lave and Wenger, 1991) open to input from others. And as senior clinicians and leaders within the wider MPT, the support of this initiative demonstrated an active commitment to the support of learning (Chatalalsingh and Reeves, 2014).

Ways of working, individually and collectively, evolve over time. Study participants, both nursing and medical staff, referred to the development of roles such as that of the ANPs. The nurses described how they have also developed their practice by undertaking interventions that in the past would have been the sole domain of doctors, and there are specialist teams of nurses who actively manage patients requiring the support of their renal function, via haemofiltration, and the support of cardiac function using ECMO. The workplace provides the opportunity to develop additional skills, applying new knowledge and depth of understanding, specific to the needs of the child.

For the senior medical staff, and these nurses, such changes affect their positional roles and responsibilities. Nancy reflected on the challenges she faced from her nursing peers when she began to extend her role by inserting IV cannulae. She also wanted to extend her role further by removing chest drains and pacing wires, which she knew were practices undertaken by nurses elsewhere. This was initially not endorsed by the surgeons of that time, and resolved, as she recounts, when she demonstrated these skills outside of the Unit.

These perspectives were not raised by other participants; this is not necessarily because they were unaware of the difficulties - the nature of IPA methodology is to discover experiences which are important to the individual (Smith et al, 2009). Participant doctors and other nurses all referred to these developing roles, and those also undertaken by specialist nursing teams (HF and ECMO), in a positive light. The value they placed on such changes contrasted with that of their surgical colleagues, since the nurses identified the benefits to patients with respect to timeliness of interventions, and doctors integrated the nurses' specialist expertise and input into their decision-making. If these developments had been problematic in the past, evidence in my study did not suggest a detrimental impact on current relationships or practice. Theory which aids understanding of these complex interactions and continued learning is Activity Theory (see figure 7.2). Johnston and Dornan (2015) identify its developing utility in medical education research.

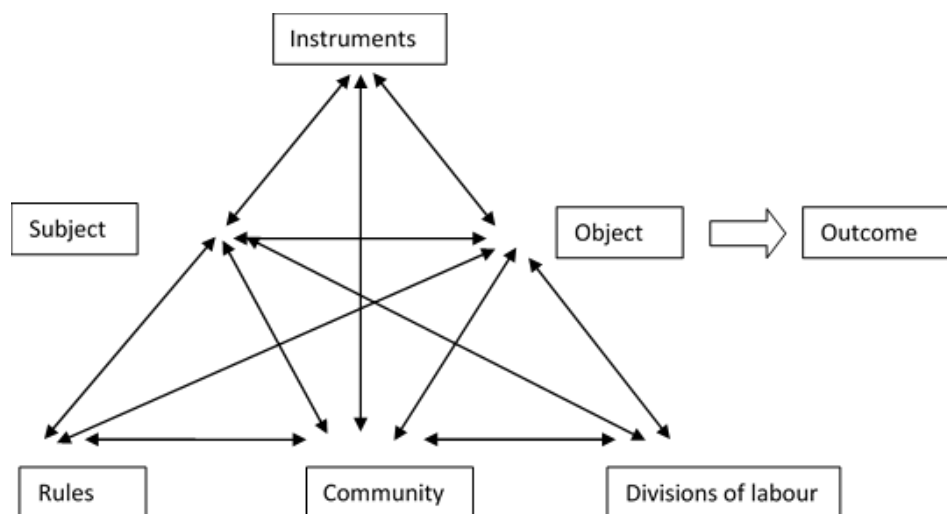


Figure 7.2 Components of the Activity System

The figure of interlocking triangles, representing activity within a system, is used to frame identification of a 'tension', and how it might be resolved.

Nancy's experience could have been actively addressed within this system of activity, as in figure 7.3 Activity Theory (overleaf) relating to Nancy. She is placed as the subject of the activity system. Her desire to extend her practice by enabling her to remove chest drains is the primary object (or objective). The rules constraining this activity are the clinical protocols, which would require amending. This would alter the divisions of labour, labelled clinical roles and responsibilities.

There is an inherent tension in the system, since she revealed that the surgeons at

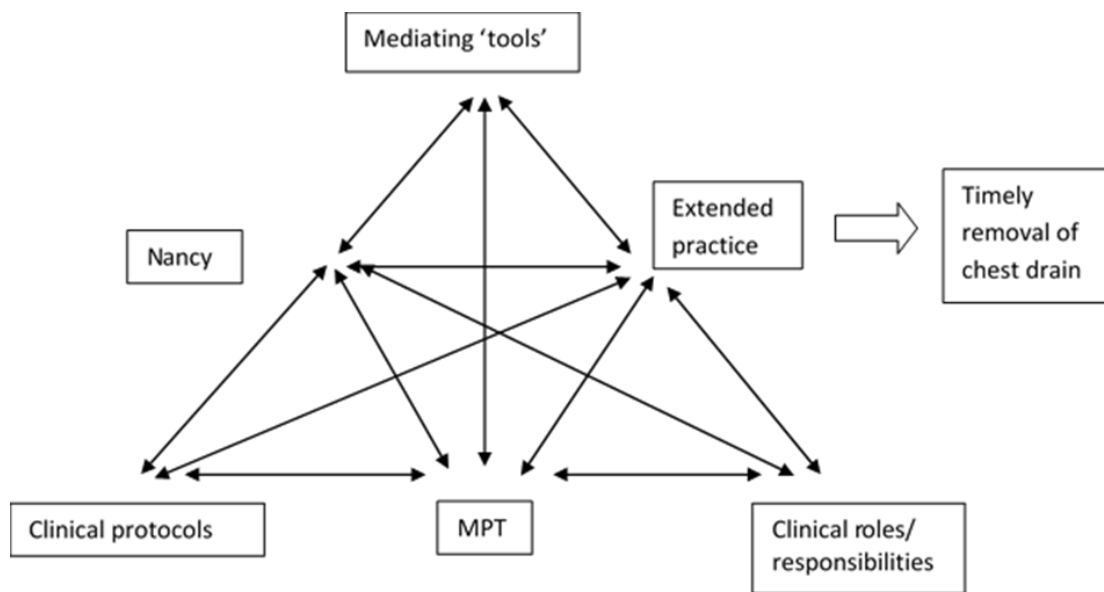
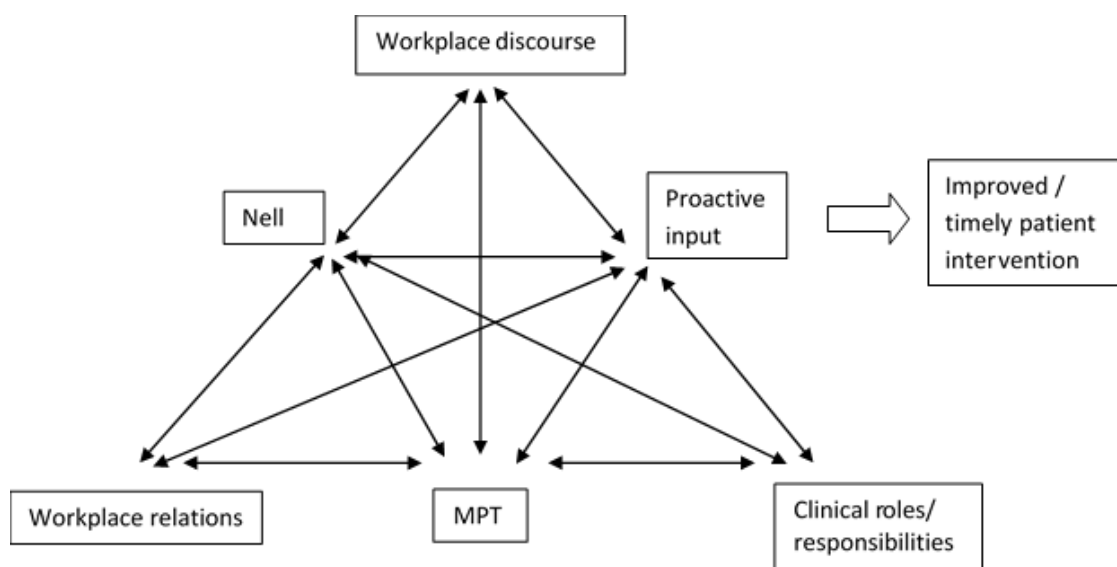


Figure 7.3 Activity Theory relating to Nancy

that time were not in favour of this change. The mediating tools to support her aim would be the opportunities to learn this skill and the underpinning knowledge-base. She learnt these skills elsewhere, and demonstrated her safe and effective technique. This relieved the tension she was able to achieve her aim. Using AT to frame to this issue would have involved an explicit acknowledgement of the problem, leading to a 'revolutionary' solution.

Compared to how AT is usually applied, by its founder Engeström (2010), I would argue that such a system has a potential application to describe and understand more 'evolutionary' change; the processes of evolution within a clinical team.

Figure 7.4 Activity Theory relating to Nell



With respect to WIL I suggest that it can frame other smaller interactions and resolutions of tension found within daily clinical life – see Figure 7.4 Activity Theory relating to Nell. Nell describes how she has taken on a more pro-active role in managing her patients – *‘in the past we relied on doctors to notice and initiate things ... our role has changed’* (Nell 43). In this example Nell becomes the subject and the object is her proactive input into the care and management of the child. Again, the MPT is the workplace community which could either support or hinder her development. Clinical roles may require subtle or specific changes over time, depending on the extent to which this might be reliant on extending practice - likewise workplace relations, and hierarchies. Mediating tools to support changes in teamwork and input might be the workplace discourses, whereby Nell can voice a more pro-active approach to the management of the child.

Organisational structures, managerial and social have the potential to engender or inhibit development opportunities (Sawchuk, 2010). Nancy revealed a later tension in respect of the response of her nursing colleagues, some of whom voiced their concerns at her taking on a role normally performed by medical staff. In her interview, she describes how this changed over time when the positive outcomes to the child became apparent. So, although the doctors are adapting to changes in the roles nurse embrace, there are similar adaptations seen within the nurse-nurse relationships.

The outcome in both examples was to provide an improved and timely management of the needs of the child. In Nancy’s case the use of AT could frame revolutionary change, whereby all relevant personnel take part in explicitly solving a problem. In the instance of the reactions of other nurses to Nancy’s activity, and in Nell’s example, I argue that this is evolutionary change, as the *processes* by which they occur are less explicit. Understanding how theory may be applied to workplace learning and developments could improve its timelier implementation. Whilst evolutionary learning may be a challenge due to its potential uncertainty, it is of value since it demonstrates responsiveness to patient need (Bunniss and Kelly, 2008).

7.2.2 Professional Discourse - sub-ordinate theme

Reflecting on experiences (Kolb, 1975) can be an individual or a social activity. When the MPT integrate their perspectives and contributions to the care and management of the child this can be a more collegial activity, and a source of learning, demonstrating social

constructivism (Vygotsky, 1987). Determining a diagnosis, deciding on the medical management, providing care, and monitoring the child's responses to therapies and interventions gives opportunities to reinforce and revise as well as supporting the integration of new knowledge (Pimmer et al, 2013). These interactions provide opportunities to activate and deepen the development of mental schemata (Gobet, 2016).

Collective learning within teams can be unpredictable, but beneficial, enabling teams to be more responsive to patient need (Bunniss and Kelly, 2008). The diversity of the patient group in PICU is acknowledged by all participants, and the complexities of the patients and concomitant uncertainty can be challenging. Angela and Abigail both referred to patients as being 'not textbook cases', bringing about the need to synthesise their knowledge and understanding in situ. Such professional conversations can be supportive, allowing for collegial problem-solving and an opportunity for emotional support (Waring and Bishop, 2010).

Formal and informal conversations enable this greater and shared understanding, and depth of learning, which can take place between smaller groups of staff when discussing the specifics of a patient, where learning and understanding may be co-constructed, (Vygotsky, 1987, and Lave and Wenger, 1991). Dominic had a much greater preference for reflecting by way of critically engaging discussions with colleagues. Contributing to decisions can not only enhance feelings of involvement but also increase the depth of learning from feedback (Acharya et al, 2014), and be highly influential in enhanced ability of recall some years later (Watling et al, 2012).

Informal learning can occur resultant to 'think aloud' teaching (Welch, 2016; and Hutchison et al, 2016), which is a similar dynamic to these professional conversations. Discussion with colleagues as to the rationale for practice and answering the 'what if ...?' questions can extend and consolidate learning, and give clinicians the opportunity for critiquing their decision-making. Discussion may be supportive of learning (Gregory et al, 2014; Pye et al 2014), and aid reflection and experiential learning (Waring and Bishop, 2010). Learning can also result from questioning (Muldowney and McKee, 2011).

Literature identifies the benefits to participating in ward rounds (Acharya et al, 2014; Gregory et al, 2014, and Paradis et al, 2016), handovers (Fernando et al, 2013), and team meetings (Alcantara et al, 2014 and Nisbet et al, 2015), which engender more formal discourses. This is also found in my study, whereby Nancy and Angela cited the benefits of

listening to, and observing the discussions that take place within the medical ward round, whilst Angela and Abigail found that they gained a greater understanding of the rationale for decisions, and an appraisal of practice, though Abigail felt that this level of critical discourse could be utilised more often in nurse to nurse interactions.

Despite wishing to include nurses and nursing input more fully within the multi-professional team ward round in ICU, it was difficult to overcome practicalities which limited the involvement (and therefore the learning opportunity) of these nurses (Paradis et al, 2016). This had not been specifically raised as an issue by nurses in my study, although it is noticeable that only the doctors spoke of the benefit of attending clinical meetings. There are opportunities for learning within this CoP (Lave and Wenger, 1991), but not if meetings are restricted (to certain groups) or restrictive (due to clinical commitments). The learning gained from attending and learning from such meetings is absent from nurses' data. Billett (2009) refers to such situations as 'affordances' which may or may not be opportunities for all individuals.

Radiologists identified benefits from inclusion in oncology meetings (Alcantara et al, 2014), whereby they gained a greater understanding of the oncologists' perspective. This is an advantage which Pippa also identified, with reference to ward rounds, which she would like to attend more regularly, but found workload a barrier. Studies reported differences of opinion between nurses and doctors as to the extent to which both groups benefitted from multiprofessional team meetings (Nisbet et al, 2015). Both groups cited benefits, but the nurses had not appreciated the extent to which the doctors gained from hearing the nurse's perspective. In my study there is evidence from all the disciplines represented that they benefit from interdisciplinary discussion, though for the nursing staff this is more often experienced on an ad hoc basis and outside of more formal meetings. The positive effects may be related to their level of expertise, the length of time they have worked together, and the beneficial working relationships they identify.

Dominic and Debs experienced the debate and discussion arising from professional discourse of fundamental benefit. Pimmer et al (2012) found that learning between consultants led to greater understanding and in some cases, prevention of errors, with similar findings from Cuyvers et al. (2016). David referred to the opportunities of such interactions but suggested there could be greater criticality gained by going beyond discourse to including

external evidence. Learning could be enhanced here by making educational outcomes more explicit, aside from the obvious clinical focus.

Professional hierarchies between doctors and nurses can have impact on learning (Burford et al, 2013; Varpio et al 2014) with nurses using mitigated speech or an indirect manner when supporting doctors. Such hierarchical factors do not appear in the data from my study, rather there is mutual respect demonstrated between team members. Positive workplace relations promote learning (Dornan, 2012) and such trust evidences a supportive learning environment (Pearson and Lucas, 2011).

The Cognitive Apprenticeship model (Collins et al, 2011) suggests that articulation, reflection and exploration support cognition and understanding. These activities are demonstrated to an extent in the accounts of their experiences, although the differing experiences of David and Dominic suggest that the outcomes of reflection may not always be fully articulated or shared. Dominic recalled that the *clinically* relevant outcomes of such discussions were documented, but this is different from recording personal learning, which is a potential shortcoming of informal learning.

It is important to recognise the reflection that occurs within a group setting (Kotzee, 2012). He contends that the notion of reflection and reflective practice, in the seminal work of Schön (1983), focuses only on the individual, and pre-supposes that the reflector has the underlying knowledge and understanding to benefit from such an activity. Professional discourses and the social component of learning are particularly prevalent in the experiences cited in my study. Participants identified benefits to such conversations, by way of sharing their thought processes and rationales for certain decisions. These discussions help to uncover tacit knowledge, and argues Kotzee (2012), are markers of professional learning and practice.

The importance individuals place on collegial support for advice and learning amongst critical care staff can be dependent on personal characteristics, as well as experience and expertise (Marshall et al, 2013). The ability to judge appropriate support is identified by Natasha and Nicole as evidence of their own expertise. There are benefits to learning from peers and colleagues (Pearson and Lucas, 2011) which Angela, Nancy, Natasha and Nell noted. Particularly relevant is recognition of the opportunities that the workplace affords. Clinicians identified the value of sharing ideas and expertise, both intra- and inter-professionally. This was promoted by a supportive environment, showing mutual respect - in addition, learning

together can increase understanding of team dynamics and subsequently working relationships (Bunniss and Kelly, 2013).

Senior doctors within critical care were reported to have limited network ties with nurses, though ties from nurses to senior doctors were found to be strong (Wagter et al, 2012). Findings from my study indicate that the participant doctors utilise expertise of nursing staff, and the wider MPT, though there is evidence to suggest that there are differences in how this is enacted. Nurses tended to '*pick the doctor's brains*' (Nell **33**), whereas the doctors utilised and integrated the specialist knowledge (HF and ECMO) of the nurses, and their detailed knowledge about particular patients. Pippa identified the specific understanding nursing knowledge brings to a situation. Their close contact with patients gives a greater depth of understanding of the individuality of each patient, thus demonstrating how the wider MPT work together to bringing their particular perspectives to bear.

The ethos of the setting is reflected in the nature of these professional discourses, with participants reporting a high degree of interactions. Petterson et al (2015) particularly identify the level of critical discussion as being effective, whilst Newton et al (2015) refer to it being an aid to navigate learning. Pippa, Dominic and David all spoke of robust yet beneficial discussions, evidential of effective learning and a mutual trust, which Abigail finds aspirational. There is evidence of a challenging yet supportive environment, with Debs identifying that in her experience this level of interaction to be greater than other places of work.

The experiences of the participants demonstrate continued utility of the range of learning theories within the continuum. Although socio-cultural and socio-material learning is well-described in the experiences of Nell and Nancy (Engeström, 2010), there were behaviourist responses to feedback, examples of vicarious learning (Bandura, 1977), learning from experience using reflection (Kolb, 1975), and social constructivist learning (Vygotsky, 1987), justifying the inclusion of this method.

7.3 Self-Identity – Super-ordinate theme

Subjectivity 'our ways of engaging with and making sense of what we experience through our lived experience' (Billett, 2010 p.6) influences our sense of self. Identity may be constructed by society for example in the way that society considers the role of a nurse, what s/he knows, and their professional conduct. The self-expressed identities of the participants

encompass those of clinician, expert, member of the MPT and lifelong learner. Willetts and Clarke (2014) note that self-categorisation is thought to have three levels, namely the superordinate or human level, the intermediate or social level as in group membership, and subordinate or personal level. All can impact on self-esteem – in this instance the social and personal levels are in evidence. The work of Maslow (1987) would support the premise that individuals are finding and refining their identities – self-actualising – and ‘transcending’ in their service to others, and their commitment to their contribution to clinical practice within this context. The identities are not only resultant from their clinical practice but also affect their motivation for learning.

7.3.1 Identity as a clinician - sub-ordinate theme

The specifics of caring for and supporting these children back to health lead to a high degree of job satisfaction – the motivational elements of the workplace. In the UK, 96% of children admitted to a PICU are discharged from the Unit to wards where they continue their recovery (PICANET, 2016). The interest which these participants place on their clinical work, and their desire to learn and develop are motivators of learning, similar to findings from a study of ICU nurses undertaken by Huggins (2004). Clinicians are formally required to demonstrate continued learning by their professional bodies (GMC, 2013; NMC 2015; HCPC 2016), and from specialist input (PICS, 2016). In the context of my study the drivers for participants’ learning were most strongly related to their clinical and professional identities, also found in literature from Bunniss and Kelly (2008). None voluntarily spoke of formally recording such learning, though Nancy, David, Abigail and Dominic specifically refer to the use of reflection in their learning. Nancy and Nicole spoke of the need to maintain credibility with peers as motivational, whilst the experiences of David, Dominic and Debs are ‘ways of being’ a clinician. Cruess et al (2016) and Vaughan (2016) suggest that this is highest level of professional practice, with findings from Vaughan (2016) indicating that this is promoted by patient encounters.

An attribute of clinical practice identified by Hutchinson et al (2016) is that of ‘anticipatory perception’. This trait is evidenced by participants’ continuing awareness and mindfulness, as exemplified by Debs ‘*get in the mode of anticipating problems*’ (Debs, **35**) and Angela ‘*It behoves you always to be a bit on edge*’, (Angela, **405**). Participants here are

evidencing internalised values that are consistent and predictable (Krathwohl et al, 1964), with a willingness to revise judgments should this be necessary.

Participants exhibited a professional approach not only to their clinical practice but in their support for the learning of others. The role of the clinician as educator, as encompassed in their relevant codes of conduct (GMC, 2013; NMC, 2015; HCPC, 2016), is identified as having a positive impact on their own learning by Nell, Natasha, Dominic, Debs, Pippa, and Nancy. Deconstructing knowledge, particularly amongst experienced clinicians, and an appreciation of the importance of role-modelling was beneficial to their own learning (Wenrich and Jackson, 2011).

From the perspective of this environment being a community of practice (CoP, Lave and Wenger, 1991), learning is encouraged by being accepted into a community. The CoP in PICU appears to be an outward looking community - welcoming to trainees and students. Potential benefits cited by Dominic in particular include opportunities to reconsider practice. This exemplifies the findings of Lave and Wenger (1991). Their membership may be transitory, but their influence is welcomed and seen as a positive effect to the permanent team's continued learning. These more junior staff can bring new or different perspectives.

7.3.2 Identity as an expert – sub-ordinate theme

In whichever ways they initially responded to a question regarding their expert status, participants sought to qualify their replies. The doctors embraced the term, but the remaining participants, except for Nancy, did not. Dominic in addition to his accepting the descriptor, described the team as being an expert team. Identifying with this term 'expert' meant that David didn't ever want to be wrong, that Nancy took pride in her expert clinical nursing roles.

Comparing novice and expert practice amongst doctors, Choudhry et al (2005) found performance (with respect to knowledge of best practice) declined over time, although this difference was less prevalent with respect to patient outcomes. Norcini (2016) cited these findings, and those of a further study from Reiter et al. (2007) as potentially demonstrating that pattern recognition (applied to the individual) overcame decline in knowledge (what might be applicable to a population) within expert practice. The issue of maintaining expertise still remains, however, though the importance of doing so was identified by all participants, and led Dominic to identify how *'it becomes blindingly obvious when people are not up to scratch.'* (Dominic, 143).

Thus, what is learned needs to be continually updated and calibrated since expertise is relative, and contextual - 'cognitive, social and cultural expertise' (Billett, 2011 p.25). What is required to be an expert clinician in the PICU is subject to change, and is evident from participants' descriptions, and influence the informal workplace curriculum. This therefore explains why many staff see expertise as an ongoing journey rather than a distinct destination, as noted by Boshuizen et al (2006). Even those who embrace the title 'expert' qualify the term by the need to foster its continuance. Reluctance to define expert performance is understandable to an extent, but judgment can be made *in practice* that is dependent on 'efficacy and elegance' (Billett, 2011 p.25).

Participants are motivated to continue this journey by their commitment to their role individually, and an equally strong commitment to the distributed expertise of the MPT, although the extent to which this is explicitly understood and shared is not clear. In their study of inter- and intra-professional learning, Nisbet et al (2013) recognise the difficulty in determining formal learning outcomes. They suggest the outcome could be construed as 'to know what when and how to act' so as to fully use team expertise. Nicole spoke of her concerns that external moves to ensure 'everyone 'knows' everything' are limiting opportunities to maintain specialist expertise within sub-groups of staff (Nicole, 2009). This is similar to the sentiments of Nicole and Natasha – 'I know who to go to' – which is a potential concern if this individual and collective expertise is not maintained.

A particular point to emerge from my study data, is the link between expertise and experience. In the novice to expert continuum, (Dreyfus and Dreyfus, 1986 and Benner, 1984), clinical educators are encouraged to move beyond intuitive practice to tacit understanding such that they can articulate their expertise and teach others. The limitations of this are recognised by Dreyfus and Dreyfus (1987), who refer to the practice of experts as 'discriminating thousands of special cases', rather than following the rules which define practice at a lower level of expertise (Dreyfus and Dreyfus, 1987 p.30). David recognises this connection between experience and expert practice here:

'Is experience part of being an expert? Yes. ... I think there's an awful lot of clinical diagnosis that you make by just knowing what they look like ... there may be good reasons to keep on doing what you've always done, but there may be bad reasons not to keep on doing what you've always done before... but miles on the clock I think are vital.' David **73-84**.

Ericsson (1993) advocates the use of deliberate practice to identify and maintain expertise, suggesting it is effortful and not enjoyable – the ‘joy’ comes with the performance. This is in contrast to experiences of the participants who gain job satisfaction from their work and so are in effect enjoying both the practice and performance. McGaghie and Kristopaitis (2015) argue that within some specialisms, estimation of expert practice can be evaluated using quantifiable measures assessed outside of the clinical situation, for example skills-based standardised tasks, such as the reporting of x-rays, or articulation of diagnostic decision-making. They acknowledge that this approach is less applicable to uncontrolled environments which would include the PICU. In these situations, they note that professional expertise is complex and adaptive, and team-based. They identify that further research is required to understand such processes and determine how they might be promoted. Findings from my study contribute to this understanding since this evidence derives from the experiences of members of the expert MPT in PICU. Expert practice and expert learning are feature of the models arising from the study findings.

7.3.3 Identity as a member of the multi-professional team - sub-ordinate theme

In their original research, the CoPs investigated by Lave and Wenger (1991) were single professional groups or craftsmen. In a later study by Wenger et al (2002), he acknowledges that a person can hold membership of more than one CoP. Staff in critical care potentially hold ‘membership’ of their own professional group, of the wider MPT, and of the ‘expert’ MPT, and may even identify further CoPs of their own, such as the nurses in the specialist teams. Handley et al (2006) suggest that participation and membership of multiple CoPs can potentially be a source of conflict, but findings from my study identify opportunities for continued learning and development.

The integration of new members to a CoP can sometimes cause dissonance if it becomes apparent that there is a need to adapt previous knowledge, skills or behaviours, in the light of new learning (Fry et al, 2003). This can be a potential tension in the clinical area when established practices are challenged either by staff who have experienced different ways of working, or by new research evidence. Whether this is a challenge, or a benefit, could depend largely on the underlying philosophy of the individual and/or the culture of the setting.

Self-regulated learning increased trainees’ confidence allowing them to practice more independently, by having a greater awareness of their abilities (Sagasser et al, 2016). Nicole

also followed a similar strategy when caring for a patient with a problem less familiar to her. She ascertained what would be required of her, and the extent to which she was confident of her capabilities. She did not refer to 'self-regulated learning' formally – but arguably she had developed this strategy nevertheless. Knowing and understanding the theoretical principles behind actions could maximise learning opportunities, and encourage others to do likewise. The level of support or scaffolding she received was appropriate to the situation, enabling her to work within her ZPD (Vygotsky, 1978). Sagasser et al (2016) also found that the cycle of clinical practice, feedback and reflection engendered confidence and competence.

Nell described the support of the team in emergency situations, with similar examples from other participants. For Pippa, she found belonging to the team an unexpected benefit, whereby she felt valued, similar to Abigail's experience, and demonstrating internalisation of such values within the affective domain (Krathwohl et al, 1964).

The overwhelming feelings of 'not-knowing' which Angela cited, could inhibit learning, but she is supported by its team culture. There is shared responsibility shown with respect for each professional's perspectives. Dominic refers to the wider MPT, not just medical the medical team, and referred to its 'esprit de corps'. Muldowney and McKee (2011) found learning to be motivated by the support given by colleagues, as evident in these examples.

The positive effects of belonging to a team are clearly apparent. Participants identified examples of a positive team culture as evidenced by the support given and the ways in which individual roles and responsibilities are valued, understood and enacted. Belonging to a team can influence learning in many ways. Bunniss and Kelly (2008) refer to collective learning as a team-coping mechanism, and identify that as learning occurs incrementally, it can be difficult to identify when it is part of everyday work. By having strong working relationships team members worked together to maximise each other's strengths. Bunniss and Kelly (2008) strongly argue for the need to support these internal learning opportunities, given the value that participants identify, and with team members sharing learning because of its inherent value. Participants in my study acted likewise, and spoke of the team as working together for the child. If team members have their contributions valued and recognised this can motivate further learning. In addition, team members supported the learning of others in their everyday practices, for example as role models, and within their day-to-day interactions.

My study findings reinforce the view that workplace practice and workplace learning are closely integrated. Teunissen (2014), identified 3 tiers of learning. The first two are

individual and personal learning, and the accumulation of experience. The third notes the impact of learning on practice, and vice versa. There is evidence from participants that their experiences of WIL encompassed the personal, the social and the cultural elements of the workplace, supporting and influencing their continued development.

7.3.4 Identity as a lifelong learner - sub-ordinate theme

Although less likely to have been specifically referred to by this term, the characteristics by which lifelong learning may be evidenced are implicitly present in the experiences of participants. Lifelong learning can be driven by internal motivators, such as providing best care for patients, job satisfaction, and wishing to develop further (Huggins et al, 2004; Goldman et al, 2009; Pimmer et al, 2013; van de Wiel et al., 2011). Key strategies to support lifelong learning include taking charge of one's own learning and setting one's own objectives (Teunissen and Dornan, 2008). However, setting specific learning outcomes is not evident from those participating in my study. Adopting a lifelong learning approach requires a balance between confidence and doubt and is maintained in a workplace culture that supports a questioning approach (Stupans (2012), who further identifies lifelong learning as an attribute and CPD a requirement – a subtle but important distinction. This is a concern identified by Dornan (2009), who argues that regulatory requirements can fail to encourage or appreciate the positive role that lifelong WPL can bring.

Davis et al (2011) define lifelong learning as being dynamic, and exhibited in both personal and professional spheres. David and Nell gave examples of informal learning opportunities inside and outside of clinical practice – evidence of 'be-ing' a lifelong learner. Characteristics of lifelong learning are to practice reflection, to have a questioning approach and to actually enjoy learning. In addition, there is an appreciation of the dynamic nature of knowledge, actively engaging in learning by seeking opportunities. To be a lifelong learning also appreciates the need for continuous updating of knowledge and skills due to the constantly changing environment (Huggins, 2004).

Nell gave numerous examples of her proactive approach to learning, for example identifying and contacting those from the wider MPT, and outside of PICU who could clarify issues and share their specialist knowledge. David described himself as being known as 'Dr. Why' in one placement, due to his questioning approach. Continuing to 'learning to learn' is

evidenced by having this questioning approach to practice (Williams, 2010), and a self-directed approach to continued learning (Schumacher et al, 2013) - it is essential for learners to take responsibility for their learning, whilst recognising the need to calibrate their self-assessment with others' practice (Newton et al, 2015). Support for continued learning can come from colleagues, and all need to consider how they contribute to the wider learning environment.

That Nell and David spoke of the ubiquitous nature of their learning, describing situations outside of work, exemplifies a Learning Identity (Kolb and Kolb (2009). This concept is a fundamental feature of lifelong learning and Kolb and Kolb (2009) theorise that self-belief in the ability to continue to learn has a strong impact on approaches to learning. Evidence for this comes from Molden and Dweck (2006), investigating the lay theories that people hold regarding both themselves and others. There are differences in attitudes between those who regard attributes and ability as fixed, and those who believe that they can be developed with effort and attention. Kolb and Kolb (2009) describe the 'fixed self' as one who avoids risk and failure, and feels threatened by the success of others. Conversely, those with a Learning Identity, 'trust the process of learning from experience, seek new experience and challenge, persist and learn from mistakes, and learn from others' success' (Kolb and Kolb, 2009 p.308). These are characteristics demonstrated by the participants in my study. Their experiences evidence their continued effort to learn and develop from the opportunities that the workplace affords, by the ways in which they refer to their experiences. The reasons for choosing and/or remaining within this specialist practice include the benefits they derive from the challenges of their work.

The data obtained from participants whilst self-reported give examples of their individual and collective value systems that support not only their own well-being through affective domain characteristics (Krathwohl et al, 1964) and notions of self-actualisation (Maslow, 1956) and transcendence (Maslow, 1970). Identity as a clinician is foundational to their practice, and well-internalised, demonstrating a commitment to learning beyond professional requirements, and a commitment to support the learning of others. Continuing pursuit of the level of practice of expert signifies a willingness to respond positively to changes in circumstances with recognition of the value and contributions of others within the wider MPT, with whom they cooperate (Krathwohl et al, 1964).

SUMMARY

The study was designed to answer the research question:

‘What perceptions do expert clinicians in a Paediatric Intensive Care have towards the experience of Workplace-Initiated Learning as a means to maintain expertise?’

The research aims

The aims of this study were:

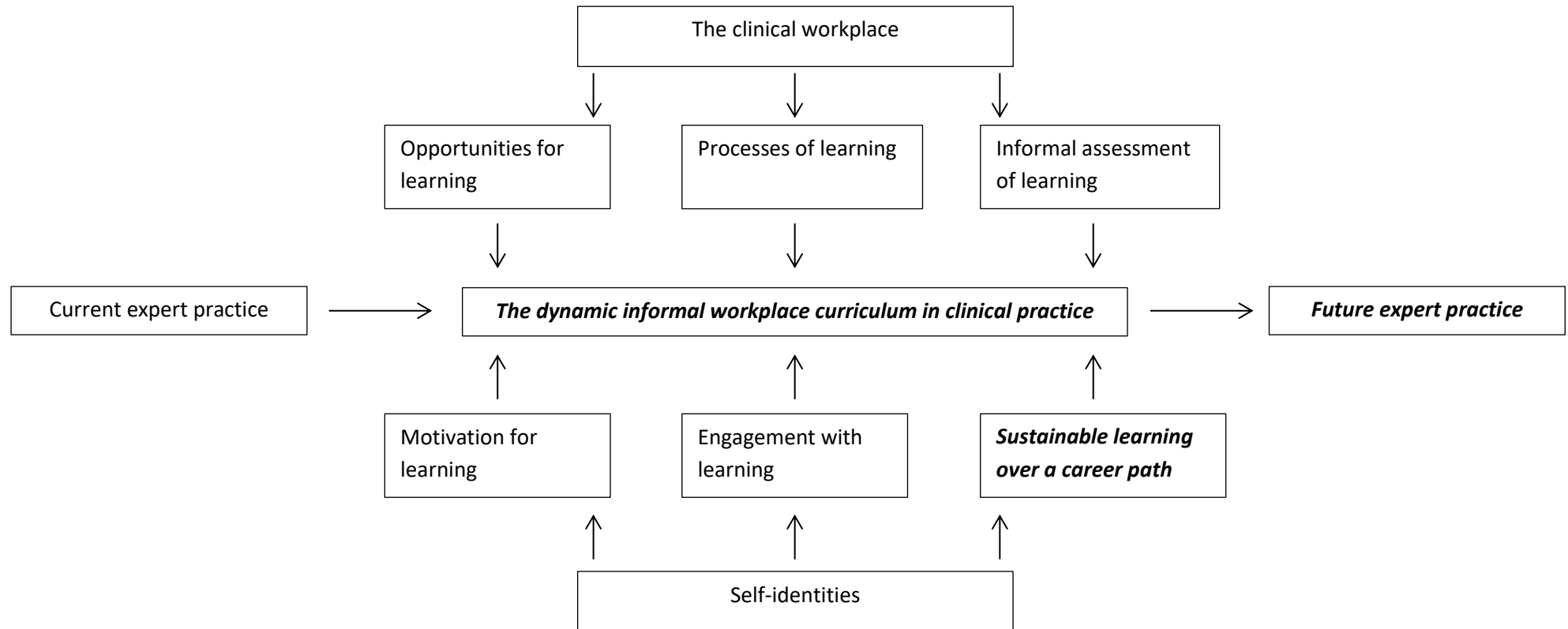
1. to explore the ways in which individual clinicians within an expert multiprofessional team, in the context of a paediatric intensive care unit, experience workplace-initiated learning within the clinical workplace
2. to increase understanding of this under-researched form of learning at the ‘expert’ level of practice, to inform the development of experts of the future

The research objectives

The objectives of this study were:

1. To explore the value placed on this form of learning by these clinicians
2. To identify the ways by which learning is supported in this context
3. To identify any barriers of learning within this context

Figure 7.5 Model of sustained expert practice



The research design has enabled the research question to be addressed, and has fulfilled the aims and objectives of this study, making an original contribution to our understanding of the dynamics of informal workplace learning at this level of practice. Figure 7.5 depicts the model of sustained expert practice, developed from empirical evidence. Participants perceive the workplace to be a source of continuing opportunities for learning. The master theme – the needs of the child and their family - demonstrates the changing and developing nature of the informal workplace curriculum, via internal and external influences, with the model displaying the direction of travel from current expert practice to continued and future expert practice. The super-ordinate theme – the clinical workplace – evidences the opportunities for WIL, by way of clinical practice and professional discourses, facilitated by clinical activities, colleagues and patients, with the processes understood through the lenses of the learning theories continuum. The weakness of the model, though not through a particular deficit of this model, is that assessment is less evident within the data, though participants exhibit a high degree of self-awareness of the need to maintain and adapt their expert practice.

Motivation, on a day-to-day basis is – not unsurprisingly - supported by their self-expressed identities of ‘clinician’, ‘expert’, ‘multi-disciplinary team member’ and ‘life-long learner’, as previously noted by Maslow (1956 and 1970) and Ryan and Deci (2000). What the data supports, and the model represents, is the role that these identities play in assuring the sustainability of this effort. Participants have ‘space’ to identify with the extent to which they embrace each of the roles of ‘clinician’, ‘expert’, ‘multi-disciplinary team member’ and ‘life-long learner’, such that for Nancy for example, who identified strongly as a clinician and expert, could develop extended clinical skills and gain a sense of worth as a result, sustaining her learning. Likewise, Dominic, identifying strongly as a clinician, and David as an expert. Although there was some evidence of strong preferences, most participants identified across the range of options. However, these characteristics and the attendant attributes found within the affective domain were not only sources of personal support, but contributed to the ethos of the Unit, and a means by which learning is sustained over a career path.

There was little mention of barriers to this learning. Some participants identified that time was an issue regarding opportunities to attend clinical meetings or take a more regular and active role within the ward round. This may be a feature of the context,

whereby all levels of staff have a clinical input and are exposed to the opportunities this promotes on a regular basis.

The following chapter, chapter 8, addresses my reflections and reflexivity over the course of the planning and implementation of this study. Chapter 9 then identifies the strengths and limitations of this study and recommendations of how these original contributions may be utilised more widely.

Chapter 8: Researcher reflections

Undertaking this study has been an interesting and at times challenging journey. From the time I started to think of studying for a Doctorate I knew that the focus would be clinical education, and the importance I place on informal learning made this a positive choice. I think it is vitally important to choose an area of personal interest and importance as (similar to expertise) this is a marathon and not a sprint.

Identifying an area of interest was not too difficult, but determining a suitable methodological approach was a challenge. I wanted to actively use my clinical and academic knowledge in my researcher development, and also wanted to design a study that had potential utility across these three disciplines. I read, spoke with and listened to research presentations, and eventually – by virtue of a leaning towards phenomenology – discovered IPA. It felt like putting on a made-to-measure jacket, and it has continued to feel an appropriate and well-aligned choice throughout this undertaking.

Moving on some months to begin data collection was exciting and nerve-wracking. For the first interview I was concerned about the practicalities of recording, and had to concentrate on being an active listener. Reflecting back on the recording, I felt that the data gained was useful and a rich and thoughtful account, but was concerned that I had not probed in enough detail, there being an instance of shared understanding within in retrospect could have been investigated further.

I feel I developed a more relaxed interviewing style as I gained in experience. These were different discourses from usual, and I was amazed at times as to the detail participants shared. Their experiences seemed authentic due to the detail. I had had an initial concern as to how I would react should participants speak of experiences which might seem out of character. Taking account of the need to actively engage and reflect

on such feelings I decided that I should approach each interview with an openness to what each participant had to share.

Listening to the recordings and transcribing them made the discourse come alive. The emotion and animation of the participants was apparent in not only what they said but how they said it, showing embodiment of their learning and professional practice.

Although there were potential challenges to having an erstwhile professional relationship with the participants, I feel that there have been advantages to this by gaining their trust and co-constructing a rich narrative to draw out a deeper understanding of expert learning and practice in this context.

Chapter 9: Strengths, limitations and recommendations

This final chapter identifies the strengths and limitations of this study, an assessment of the quality of the study and recommendations for its use for educators, researchers and clinicians.

9.1 Strengths and limitations

This study investigated an under-researched area of WIL, that of the experiences of an expert MPT. It established that the data and findings indicate this specific focus to be worthy of continued interest, as the value of WIL to these participants is clearly evident. Since the study focused on a specific clinical area it gave the opportunity to include the socio-cultural perspective of the setting. Detailed description of the context helps readers of this study determine what is held in common and what might be different in their own situation, though each clinical workplace will have its own history, culture, social groups and ways of working. This study recognises and appreciates this diversity, but recommendations need to be evaluated in relation to this.

IPA gives an important perspective by recognising the importance of the individual, and in identifying the range of experiences. My previous knowledge and experience were relevant and utilised in the methodology this decision – interpreting the double hermeneutic of participants' experiences (Smith et al, 2009). IPA is not a common methodology used in researching workplace learning, having its origins in qualitative psychology studies (Smith et al, 2009) so findings from this study also contribute to the ways in which this methodology might be considered an appropriate one for further studies elsewhere.

Although there were benefits to having worked in this clinical setting, and alongside the research participants, this was also a potential source of bias, alleviated by reflexivity, and transparency throughout all stages of the study, as identified in chapter 8.

The participants were self-selected from the larger group of potential staff. It may be that these were naturally more inclined to take part due to their espousal of learning in the workplace. The characteristics of this group of ten were also fortuitously illustrative of the MPT. Smith et al (2009) suggest participants should be chosen as representative of homogeneity. Had this not occurred I would have taken active steps to address this requirement – nevertheless I cannot assume that these ten were necessarily characteristic and representative of the clinicians within the Unit. It is of interest to note here that of those approached as being socially and professionally identified experts - the doctors, ANPs, physiotherapists, pharmacists and band 6 and 7 nurses – all would have had non-patient hours as part of their working week, apart from the band 6 nurses. It is not known for certain whether this was influential to there being only one of the potential 38 band 6 staff taking part in the study, but such practicalities may have been in part a reason for such a low uptake. Worthy of note here is that participants did not mention personal learning from failure, which could be because it was difficult to admit to themselves or to me. The experiences were principally positive ones – again this may be easier to share, however, the examples given had an authenticity.

For a more formal appraisal of quality, Smith et al (2009) suggest following the criteria outlined by Yardley (2000) as being most suitable for an appraisal of the strengths and limitations of an IPA study.

9.1.1 Sensitivity to context

Sensitivity to context is exhibited by identification of relevant theory and literature through which to interpret empirical data (Yardley, 2000), demonstrating depth of analysis and an understanding of the socio-cultural setting, individual participant perspectives and ethical issues. Throughout my clinical and academic career, and as a critical reader and now producer of empirical research, authentic learning has always been important to me, as I have indicated in the preface.

Within the critical interpretive literature review, chapter 2, I identified and utilised previous generic WPL research, as well as that focused on the clinical setting. The critical interpretive review identified empirical evidence and current understanding. This informed the direction and content of the semi-structured interview, and identified that the focus of this study could add to the findings of previous empirical studies. Identification and justification of relevant learning theory led to my design of the theoretical framework, in chapter 2.

A distinct advantage of my previous clinical experience had been to understand the broad context of the setting. During the interview process, I understood the clinical language and terms used such that it was not a distraction, nor did I spend valuable time seeking to clarify pure clinical detail.

I am genuinely interested in the range of ways in which WIL may be experienced. In my research proposal and letter of invitation (Appendix I), my intention has been to present this view such that others believe it to be deeply held. I chose IPA as individual experiences are a central tenet (the idiographic) and not subsumed in to a generalisable data.

Working with research participants with whom I have had a professional relationship has brought an added layer of ethical consideration to this study. I was not aware of a power balance from my perspective, and I felt we were meeting as equals, to have a dialogue by which together we could uncover their experiences. Participants appeared to find the interview of interest, and spoke with animation of their experiences. When analysing the data, I felt a responsibility to do so with authenticity, and focused on their individual experiences and perspectives.

9.1.2 Commitment and rigour

I have been committed to a deep engagement with the topic throughout the course of the study, developing and expanding my researcher skills, particularly within the use of IPA as a methodological approach. The steps to the analysis require immersion in the data, looking for authentic interpretation, which Yardley refers to as a combination of deep engagement with theoretic possibilities, versus 'common sense' understandings. Yet throughout the study I have frequently felt that such understanding maybe far from common, and also that it might be important to note the obvious as well as the more profound. The use of a number of lenses and theoretical perspectives have

been specifically identified and included in the research design to help overcome any limitations relating to presupposition of participant experiences.

I have made active and reflexive use of my own experiences – I have a passionate interest in learning, especially informal, which is part of my philosophy of teaching. When teaching in my current role I often refer to the power of contextual learning in practice. That said, I also appreciate diversity in approaches to learning, and would have welcomed participants who had different preferences, which I made clear in the letters of invitation.

There are limits to self-selection; Smith et al (2009) suggest purposeful recruitment to promote homogeneity. There were similarities and differences across the participant group – all were clinicians in the one Unit, though not all from the same profession, although there was a certain coherence across experiences.

Each clinical area will have its own culture, historical background and ways of working – maybe more nuanced than clinicians and even researchers might appreciate when studying a specific area of specialised practice, but important to take account of this in recommendations, and detail as to the context aids others in making this judgment.

The quality of data is related to the ability to probe beneath the surface of respondent answers. There were pros and cons in having had a previous professional relationship with the participants. Trust was evident, the participants seemed relaxed and keen to speak of their experiences. But I was concerned as to whether I would probe deep enough and that there might be common assumptions made rather than clarity in responses. I aimed to minimise the risks and utilise the benefits by engaging in a reflexive approach throughout each stage of the study.

When initially reading of the use of IPA as a methodology, I immediately saw its potential as appropriate to answer my RQ. I studied its philosophical foundations, and its application in previous studies to give me an in-depth appreciation and to ensure that my research design adhered to its key principles. I have followed the on-line IPA group and on occasions taken part in the discussion, and spoken informally with colleagues who have experience in the use of IPA as a research methodology. This has helped me to appreciate not only the theory behind its use, but its practical and potential application.

The participant interviews provided a rich source of data. The broad interview questions gave participants the opportunity to speak of the aspects of WIL that were of importance to them. IPA has enabled the rich and detailed findings to be integrated with theory and previous empirical data.

9.1.3 Transparency and coherence

Yardley (2000) writes of the need to construct a persuasiveness argument, going beyond description. The models constructed demonstrate expert practice and learning within the complexity of this context, and a model of dynamic expert practice and expert learning. This illustrates how self-identities are markers for self-actualisation and not only provide a sustaining desire to learn, but are supportive of the learning of others within this expert team. It was challenging at times to construct such models. I did not wish to oversimplify the complexity of this context and the problem area of interest, and a particular challenge was the extent to which I had a tacit understanding what this model might include – similar to the arguments proposed by Dreyfus and Dreyfus (1986) and Benner (1984) in that it is possible to know more than can be articulated. Continued immersion in the data and the findings, and discussion with colleagues supported the gradual development of what these findings might portray within the wider context of academic theory and clinical learning.

I would argue that there was a clear fit between the philosophical stances of the study – epistemology, ontology and axiology. Personal experiences of the participants were paramount, so triangulation of other perspectives was not appropriate. My motivation was not to ‘discover’ by presupposition any particular experience or range of experiences – hence the design of the conceptual framework to identify this breadth of possibility. However, I found that during the course of the study there were potential risks to it being too divergent, and an especial challenge was in being a sole researcher working on the study on a part-time basis.

The report of the study contains detailed documentation of data collection and thematic analysis. An audit was undertaken by one of the supervisory team (CA) to confirm the process, not to agree with any findings or interpretations. All documentation sent to participants – the invitation to participate; the participant information sheet; the consent form; the semi-structured interview design with additional probing questions for further detail and clarification, are available for scrutiny as are two exemplars of the note-taking and interpretation of data.

Likewise, there was a detailed process of the interpretive literature review, identifying inclusion and exclusion criteria, and a rationale for the quality assurance mechanism (Walsh and Down, 2005). The methodology of the review aligned with the methodology of the actual study – the identification of themes and their inter-relationship – which I felt to demonstrate a coherent alignment to the design from the identification of the question through to findings and discussion.

9.1.4 Impact and importance

As I have held different roles and responsibilities during my career I appreciate there are differing views as to the application of theory to learning and the degree of interest a clinician might have with the findings. Determining the degree of utility of research findings depends on the position of the reader and potential user of such findings, with different situations and individuals having different perspectives. However, there are practical applications for these findings as well as a theoretical outlook. There are changing perspectives of what it is to be an expert in practice – not necessarily all-knowing but all-understanding of one's own interests and attributes and even limitations. To be mindful of the need to continue to learn and how that might be supported by values and attitudes which also support others is demonstrated in these findings. This is not a weakness but a strength in this context, though expertise might be enacted in different ways in different contexts.

These findings are timely given the current challenges within the NHS, whereby clinicians are looking to leave practice earlier than their predecessors might have done (Lambert et al, 2018; Tee and Scammell, 2018) which risks the development of experts and expertise for the future.

WIL is a complex phenomenon. I identified a continuum of theories, in appreciation of the many ways in which WIL is experienced and supported within the clinical workplace. The findings from my study add to the understanding of this application of theory to practice, by way of the participants' articulation of their experiences. By choosing to investigate the experiences of clinicians across the MPT this has given an added perspective to the findings, demonstrating the value they place on working and learning together. I have presented my 'work-in-progress' at peer-reviewed conferences which have been well-received, and I look forward to publishing and presenting empirical findings in the future. I have had a book chapter published, focused on the use of theory in research (Cochrane, 2011).

9.2 Original contributions to knowledge

The original and specific contributions to knowledge that this study evidences are

1. the rich detail of expert practice and expert learning within the clinical workplace culminating in design of a Model of Expert Learning and Working, figure 7.1, p.192
2. the design of a Model of Sustained Expert Practice, figure 7.5, p.214

9.3 Recommendations

Returning to the rationale for the study, all healthcare related professional bodies recognise the importance of continuing professional development and lifelong learning (General Medical Council (GMC), 2013; Nursing and Midwifery Council (NMC) 2015; General Pharmaceutical Council (GPC), 2017; Health Care Professions Council (HPCP), 2016). This is a professional requirement, as is the objective to manage and deliver effective and efficient care. These are also the expectations of society, the commitment of the government, (DoH, 2016) and the remit of HEE. There is a paucity of empirical data on workplace learning at this level of practice, therefore findings from this study add evidence to our understanding. These recommendations identify the utility of the study design and the findings both within and beyond that of the original context, which can be used to guide and inform the development of the experts of the future, locally, nationally and also professionally.

9.3.1 Recommendations for future research

IPA as a research methodology gives an added and important perspective to WIL in general and specifically in this situation. Individual experiences identify the range of ways in which WIL supports continued learning and adaptability. These findings are certainly of interest and influence, but also of importance I would argue, is the study design. Replication of the study would be valuable in other settings; no two areas are the same, so undertaking similar local studies will add to our understanding of the impact of context and culture, and have the potential to inform the development of experts of the future within other specialist fields. The interview questions may seem simple – why did you choose a career in this area of practice? What keeps you there? What areas of your continuing expertise have been influenced by the clinical workplace?

Yet the close interpretation and analysis of this data has produced rich and detailed examples of the role that WIL plays in continued expert practice and expert learning.

This study made no reference to the use of technology to enhance WIL, which could be a direction for future studies.

9.3.2 Recommendations for education

Findings from this study identify characteristics of the 'expert to continuing expert' trajectory, and the influence and integration of the clinical workplace and the self-identities of clinicians in this sustained journey, within this specific context. They also demonstrate the value these clinicians place on the utility of WIL to support and enhance their continued expertise. Their commitment to patient care and to the support of each other each is a major motivation and a sustaining feature of in their clinical career, and in their learning. Professional bodies should look to emphasise the wider benefits of WIL as a strategy for continued and sustained learning and enthusiasm for clinical practice.

Some participants moved to paediatric intensive care by way of a deliberate decision, whilst others came to choose this area as a career almost serendipitously yet remained and flourished in this environment. The characteristics of the specialism were more apparent once experienced. Educators should consider increasing the opportunities for undergraduate and early post-graduate clinicians to be exposed to a wide range of clinical placements and contexts, such that this alignment of preference and attributes (both personal and as features of the clinical setting) may be fully taken advantage of. This may be particularly beneficial in areas which are less popular, if educators are able to support learners to experience the particular and positive qualities of such specialisms.

This approach may be applied locally by NHS Trust educators, and nationally and professionally by those leading and managing both under- and post-graduate clinical programmes. In addition, this study demonstrates the changes and extensions to the traditional roles and the development of new roles require members of the MPT (including those practicing at the highest levels of expertise) to reappraise roles and responsibilities, and accommodate dynamic interprofessional working practices in order to capitalise on individual and team expertise, to provide efficient and effective care.

9.3.3 Recommendations for practice

Promoting the concept of sustainability of learning and how this might be achieved in practice to both personal and collegial benefit could enhance such opportunities to staff who may be unaware of the wider potential of this form of learning. Participants in this study identified the extent to which they capitalised on workplace learning affordances - this study has increased our understanding of the concept of workplace learning as experienced by expert clinicians. Locally – within departments and within the wider NHS Trusts – undertaking a regular audit of informal learning opportunities across all grade of staff could help ensure that learning potential is harnessed and enhanced at all levels of practice.

9.3.4 Recommendations for policy

Participants demonstrated a highly engaged approach to learning in the workplace the depth of which might not be reflected in their recordings of this form of learning. Professional organisations should continue to promote this option. These findings may be incorporated into local policy by way of Personal Development Planning, and nationally by way of the guidance given by the individual professional regulatory bodies in respect of evidencing Continuing Professional Development.

9.4 Final summary

The findings from this study are clearly contextual and premise the individual experiences of these expert clinicians. The detailed evidencing of the context and study design promote transferability and replication. Having demonstrated the importance these clinicians place on WIL, practitioners, educators and researchers elsewhere might be motivated to take an interest in the concept of sustainability of expert practice, and explore how this is experienced by practitioners in different specialisms and settings, and thus extend understanding of the means by which future expertise may be upheld.

References

- ACHARYA, V., REYAH, A., AMIS, S.M. and MANSOUR, S., 2015. Do "trainee-centered ward rounds" help overcome barriers to learning and improve the learning satisfaction of junior doctors in the workplace? *Advances in Medical Education and Practice*, 6, pp. 583-588.
- ALCANTARA, S.B., REED, W., WILLIS, K., LEE, W., BRENNAN, P. AND LEWIS, S., 2014. Radiologist participation in multi-disciplinary teams in breast cancer improves reflective practice, decision making and isolation. *European Journal of Cancer Care*, 23(3), pp. 616-623.
- AL-ERAKY, M. and MAREI, H., 2016. A fresh look at Miller's pyramid: assessment at the 'Is' and 'Do' levels. *Medical Education*, 50(12), pp.1253-1257.
- ALLEN-COLLINSON, J., 2009. Sporting embodiment: sports studies and the (continuing) promise of phenomenology. *Qualitative Research in Sport And Exercise*, 1(3), pp.279-296.
- ANDERSON, L.W., KRATHWOHL, D.R., AIRASIAN, P.W., CRUIKSHANK, K.A., MAYER, R.E., PINTRICH, P.R., RATHS, J. and WITTROCK, M.C., 2001. *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives, abridged edition*. White Plains, NY: Longman.
- AUBREY, K. and RILEY A., 2015. *Understanding and using educational theories*. Los Angeles: Sage
- BANDURA, A., 1977. *Social Learning Theory*. Englewood Cliffs, NY: Prentice-Hall.
- BENNER, P., 2009. *Expertise in nursing practice: caring, clinical judgment and ethics*, New York: Springer.
- BENNER, P., 2001. Taking a stand on experiential learning and good practice. *American Journal of Critical Care*, 10(1), p.60.
- BENNER, P., 1996. A response by P. Benner to K. Cash, "Benner and expertise in nursing: a critique". *International Journal of Nursing Studies*, 33(6), pp.669-674.
- BENNER, P., 1984. From novice to expert. *Menlo Park*.
- BENNER, P. and TANNER, C., 1987. How expert nurses use intuition. *AJN The American Journal of Nursing*, 87(1), pp.23-34.
- BERA 2011. *Ethical Guidelines for Educational Research*. British Educational Research Association: London
- BILLETT, S., 2016. Learning through health care work: premises, contributions and practices. *Medical Education*, 50(1), pp. 124-131.
- BILLETT, S., 2015. Work, discretion and learning: processes of life learning and development at work. *International Journal of Training Research*, 13(3), pp.214-230.
- BILLETT, S., 2011. Subjectivity, self and personal agency in learning through and for work. *The Sage Handbook of Workplace Learning*, pp.60-72.

- BILLETT, S., 2010. Lifelong learning and self: Work, subjectivity and learning. *Studies in Continuing Education*, 32(1), pp.1-16.
- BILLETT, S., 2009. Personal epistemologies, work and learning. *Educational Research Review*, 4(3), pp.210-219.
- BILLETT, S., 2005. Recognition of learning through work. In *International Handbook of Educational Policy* (pp. 943-962). Springer, Dordrecht.
- BILLETT, S., 2001. *Learning in the Workplace: Strategies for Effective Practice*. Allen & Unwin, PO Box 8500, St Leonards, 1590 NSW, Australia.
- BLEAKLEY, A., 2006. Broadening conceptions of learning in medical education: the message from teamworking. *Medical Education*, 40(2), pp.150-157.
- BLOOM, B.S., ENGELHART, M.D., FURST, E.J., HILL, W.H. and KRATHWOHL, D.R., 1956. *Taxonomy of Educational Objectives: The Classification of Educational Goals: Handbook I: Cognitive Domain* (No. 373.19 C734t). New York, US: D. Mckay.
- BLOOM, B., HARROW, A. and KRATHWOHL, D., 1972. *A Taxonomy of the Intellectual, Affective and Psychomotor Domains of Learning*.
- BOOTH, A., SUTTON, A. and PAPAIOANNOU, D., 2016. *Systematic approaches to a successful literature review*. Sage.
- BORDAGE, G., 2009. Conceptual frameworks to illuminate and magnify. *Medical Education*, 43(4), pp.312-319.
- BOSHUIZEN, H.P., BROMME, R. and GRUBER, H. eds., 2006. *Professional learning: Gaps and Transitions on the Way from Novice to Expert* (Vol. 2). Springer Science & Business Media.
- BROOKFIELD, S.D., 2002. Using the lenses of critically reflective teaching in the community college classroom. *New Directions for Community Colleges*, (118), pp.31-38.
- BUNNISS, S. AND KELLY, D.R., 2008. 'The unknown becomes the known': collective learning and change in primary care teams. *Medical Education*, 42 (12), pp. 1185-1194.
- BUNNISS, S. and KELLY, D.R., 2013. Flux, questions, exclusion and compassion: collective learning in secondary care. *Medical Education*, 47(12), pp. 1197-1208.
- BURFORD, B., 2012. Group processes in medical education: learning from social identity theory. *Medical Education*, 46(2), pp. 143-152.
- BURFORD, B., MORROW, G., MORRISON, J., BALDAUF, B., SPENCER, J., JOHNSON, N., ROTHWELL, C., PEILE, E., DAVIES, C., ALLEN, M. and ILLING, J., 2013. Newly qualified doctors' perceptions of informal learning from nurses: implications for interprofessional education and practice. *Journal of Interprofessional Care*, 27(5), pp. 394-400.
- CARPER, B.A., 1999. Fundamental patterns of knowing in nursing. *Perspectives on philosophy of science in nursing: an historical and contemporary anthology*. Philadelphia: Lippincott, pp.12-20.

- CARTER, S.M. and LITTLE, M., 2007. Justifying Knowledge, Justifying Method, Taking Action: Epistemologies, Methodologies, and Methods in Qualitative Research. *Qualitative Health Research*, **17**(10), pp. 1316-1328.
- CAVERZAGIE, K.J., GOLDENBERG, M.G. and HALL, J.M., 2019. Psychology and learning: The role of the clinical learning environment. *Medical Teacher*, **41** pp. 375-379.
- CHAN, D.S., 2003. Validation of the clinical learning environment inventory *Western Journal of Nursing Research*, **25** (5), pp. 519-532.
- CHATALALSINGH, C. and REEVES, S., 2014. Leading team learning: what makes interprofessional teams learn to work well? *Journal of Interprofessional Care*, **28**(6), pp. 513-518.
- CHIAVAROLI, N. and TRUMBLE, S., 2018. When I say... phronesis. *Medical Education*, **52**(10), pp.1005-1007
- CHOUDHRY, N.K., FLETCHER, R.H. and SOUMERAI, S.B., 2005. Systematic review: the relationship between clinical experience and quality of health care. *Annals of Internal Medicine*, **142**(4), pp.260-273.
- COCHRANE, J., 2011. Learning and Maintaining Professional Expertise Within a Multi-Professional Critical Care Team. In Adams G., Cochrane, M. and Dunne, L. *Applying Theory to Educational Research: An Introductory Approach with Case Studies*, pp.15-29.
- COFFIELD, F., MOSELEY, D., HALL, E. and ECCLESTONE, K., 2004. *Should we be using learning styles? What research has to say to practice*. LSRC reference, Learning & Skills Research Centre, London.
- COLLINS ONLINE DICTIONARY, 2018. Expert <https://www.collinsdictionary.com/dictionary/english/expert> [accessed 3 January 2018]
- COLLINS, A., BROWN, J.S. and HOLUM, A., 1991. Cognitive apprenticeship: Making thinking visible. *American Educator*, **15**(3), pp.6-11.
- CRESWELL, J., 2012. W. 1994. *Research design: qualitative and quantitative approaches*. Thousand Oaks.
- CRONIN, M., CRONIN, P. and RYAN, F., 2007. Step-by-step guide to critiquing research. Part 1: quantitative research. *British Journal of Nursing*, **16**(11), pp.658-663.
- CRUESS, R.L. and CRUESS, S.R., 2008. Expectations and obligations: professionalism and medicine's social contract with society. *Perspectives in Biology and Medicine*, **51**(4), pp.579-598.
- CRUESS, R.L., CRUESS, S.R. AND STEINERT, Y., 2016. Amending Miller's Pyramid to Include Professional Identity Formation. *Academic Medicine*, **91**, pp. 180-185.
- CUSTER, J.W., WHITE, E., FACKLER, J.C., XIAO, Y., TIEN, A., LEHMANN, H. and NICHOLS, D.G., 2012. A qualitative study of expert and team cognition on complex patients in the pediatric intensive care unit. *Pediatric Critical Care Medicine*, **13**(3), pp.278-284.

CUYVERS, K., DONCHE, V. and VAN DEN BOSSCHE, P., 2016. Learning beyond graduation: exploring newly qualified specialists' entrance into daily practice from a learning perspective. *Advances in Health Sciences Education*, 21(2), pp.439-453.

THE NATIONAL ARCHIVE, 2018. Data protection act 1998.

<http://www.legislation.gov.uk/ukpga/1998/29/section/51/2003-08-19?timeline=true>

[Accessed 3 January 2018]

DAVIS, L., TAYLOR, H. AND REYES, H., 2011. Lifelong learning in nursing: A Delphi study. *Nurse Education Today*, 34, pp. 441-445.

DENZIN, N.K. and LINCOLN, Y.S. eds., 2011. *The Sage Handbook of Qualitative Research*. Sage.

DEPARTMENT OF HEALTH, 2015. *Delivering high quality, effective, compassionate care: developing the right people with the right skills and the right values: a mandate from the Government to Health Education England, April 2015 to March 2016*. DoH: Leeds.

DILLON, J.T., 2009. The questions of curriculum. *Journal of Curriculum Studies*. 41(3) pp.343-359.

DORNAN, T., 2012. Workplace learning. *Perspectives in Medical Education*, 1, pp. 15-23.

DREYFUS, H. L., DREYFUS, S. E., BENNER, P. 2009 In: BENNER, P. E., TANNER, C. A., CHESLA, C. A. *Expertise in Nursing Practice: Caring, Clinical Judgment and Ethics*. 2nd edition. New York: Springer Pub., 309-333

DREYFUS, H.L. and DREYFUS, S.E., 1986. From Socrates to expert systems: The limits of calculative rationality. In *Philosophy and Technology II* (pp. 111-130). Springer Netherlands.

DURNING, S.J., ARTINO JR, A.R., PANGARO, L.N., VAN DER VLEUTEN, C. and SCHUWIRTH, L., 2010. Perspective: redefining context in the clinical encounter: implications for research and training in medical education. *Academic Medicine*, 85(5), pp.894-901.

EATOUGH, V. and SMITH, J.A., 2008. Interpretative phenomenological analysis. In C. Willig & W. Stainton-Rogers (Eds.), *The Sage Handbook of Qualitative Research in Psychology*, pp. 179-197. London: Sage.

ENGESTRÖM, Y., 2010. Expansive Learning at Work: Toward an activity theoretical reconceptualization. *Journal of Education and Work*, 14(1), pp. 133-156.

ENGESTRÖM, Y., 2004 The new generation of expertise: seven theses. In H. RAINBIRD, A. FULLER and A. MUNRO, (Eds) *Workplace Learning in Context* Routledge, London; New York.

ENGESTRÖM, Y., 2011 Expansive learning at work: toward an activity theoretical reconceptualization. *Journal of Education and Work*, 14 (1), pp.133–56.

ERAUT, M., 1994. *Developing Professional Knowledge and Competence*. Psychology Press.

ERAUT, M., 2000. Non-formal learning and tacit knowledge in professional work. *British Journal of Educational Psychology*, 70(1), pp. 113–136.

- ERAUT, M., 2004. Informal learning in the workplace. *Studies in Continuing Education*, 26(2), pp.247-273.
- ERAUT, M., 2007 Learning from other people in the workplace. *Oxford Review of Education*, 33(4), pp.403-422.
- ERAUT, M., 2011. Informal learning in the workplace: evidence on the real value of work-based learning. *Development and Learning in Organizations: An International Journal*, 25(5), pp. 8-12.
- ERICSSON, K.A., 2015. Acquisition and maintenance of medical expertise: a perspective from the expert-performance approach with deliberate practice. *Academic Medicine*, 90(11), pp.1471-1486.
- ERICSSON, K.A., 2004. Deliberate practice and the acquisition and maintenance of expert performance in medicine and related domains. *Academic Medicine*, 79(10), pp. S70-S81.
- ERICSSON, K.A., KRAMPE, R.T. and TESCH-RÖMER, C., 1993. The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, 100(3), p.363.
- ETELÄPELTO, A., VÄHÄSANTANEN, K., HÖKKÄ, P. and PALONIEMI, S., 2013. What is agency? Conceptualizing professional agency at work. *Educational Research Review*, 10, pp.45-65.
- FELTOVICH, P.J., PRIETULA, M.J. and ERICSSON, K.A., 2018. 6 Studies of Expertise from Psychological Perspectives: Historical Foundations and Recurrent Themes. *The Cambridge Handbook of Expertise and Expert Performance*, p.59.
- FENWICK, T., 2008. Understanding Relations of Individual-Collective Learning in Work: A Review of Research. *Management Learning*, 39(3), pp. 227-243.
- FERNANDO, K., ADSHEAD, N., DEV, S. and FERNANDO, A., 2013. Emergency department multiprofessional handover. *Clinical Teacher*, 10(4), pp. 219-223.
- FINLAY, L., 2008. A Dance Between the Reduction and Reflexivity: Explicating the “Phenomenological Psychological Attitude” *Journal of Phenomenological Psychology*, 39, pp. 1-32.
- FINLAY, L., 2014. Engaging phenomenological analysis. *Qualitative Research in Psychology*, 11(2), pp.121-141.
- FLEMING, T., 2011. Models of lifelong learning: An overview. *The Oxford Handbook of Lifelong Learning*, pp.29-39.
- FLOTT, E.A. and LINDEN L. 2016. The clinical learning environment in nursing education: a concept analysis. *Journal of Advanced Nursing* 72(3), pp. 501–513.
- FULLER, A., HODKINSON, H., HODKINSON, P. and UNWIN, L., 2005. Learning as peripheral participation in communities of practice: a reassessment of key concepts in workplace learning. *British Educational Research Journal*, 31(1), pp.49-68.
- GADAMER, H.-G. 1985. ‘*Philosophy and Literature*’, trans. A.J. Steinbock, *Man and World* 18: 241–59.

- GENERAL MEDICAL COUNCIL, 2013. *Good medical practice*. <https://www.gmc-uk.org/ethical-guidance/ethical-guidance-for-doctors/good-medical-practice> [Accessed 3 January 2018]
- GENERAL PHARMACEUTICAL COUNCIL, 2017. *Standards for pharmacy professionals*. https://www.pharmacyregulation.org/sites/default/files/standards_for_pharmacy_professionals_may_2017_0.pdf [Accessed 3 January 2018]
- GIORGI, A., 2011. IPA and Science: A Response to Jonathan Smith. *Journal of Phenomenological Psychology*, 42(2), pp. 195-216.
- GIORGI, A., 2010. Phenomenology and the practice of science. *Existential Analysis*, 21(1), pp.3-22.
- GOBET, F., 2016. *Understanding Expertise: A Multidisciplinary Approach*. London: Palgrave.
- GOBET, F. and CHASSY, P., 2008. Towards an alternative to Benner's theory of expert intuition in nursing: a discussion paper. *International Journal of Nursing Studies*, 45(1), pp.129-139.
- GOBET, F. and SIMON, H.A., 2000. Five seconds or sixty? Presentation time in expert memory. *Cognitive Science*, 24(4), pp.651-682.
- GOLDMAN, E., PLACK, M., ROCHE, C., SMITH, J., AND TURLEY, C., 2009. Learning in a chaotic environment. *Journal of Workplace Learning*, 21(7), pp. 555-574.
- GOLDSZMIDT, M. and FADEN, L., 2016. Is medical education ready to embrace the socio-material? *Medical Education*, 50(2), pp. 162-164.
- GOVRANOS, M. AND NEWTON, J.M., 2014. Exploring ward nurses' perceptions of continuing education in clinical settings. *Nurse Education Today*, 34, pp. 655-660.
- GRANT, J., 2018. Principles of curriculum design. In K. FORREST, T. SWANWICK, and B.C. O'BRIEN, eds *Understanding Medical Education: Evidence, Theory and Practice*. 3rd edn. John Wiley and Sons Ltd. pp. 71-78
- GRAY, D.E., 2013. *Doing research in the real world*. London, Sage
- GREENHALGH, T., THORNE, S. and MALTERUD, K., 2018. Time to challenge the spurious hierarchy of systematic over narrative reviews? *European Journal of Clinical Investigation*, 48(6), p.e12931.
- GREGORY, L.R., HOPWOOD, N. and BOUD, D., 2014. Interprofessional learning at work: what spatial theory can tell us about workplace learning in an acute care ward. *Journal of Interprofessional Care*, 28(3), pp. 200-205.
- HAFFERTY, F. W. 1998. Beyond curriculum reform: Confronting medicine's hidden curriculum. *Academic Medicine*, 73(4), pp. 403–407.
- HALLIDAY, D.A., 2018. *A Concept Analysis of Expert Performance*. Sigma's 29th International Nursing Research Congress.

- HAMBRICK, D.Z., BURGOYNE, A.P., MACNAMARA, B.N. and ULLÉN, F., 2018. Toward a multifactorial model of expertise: beyond born versus made. *Annals of the New York Academy of Sciences*.
- HAYES, M.M., CHATTERJEE, S. and SCHWARTZSTEIN, R.M., 2017. Critical thinking in critical care: five strategies to improve teaching and learning in the intensive care unit. *Annals of the American Thoracic Society*, 14(4), pp. 569-575.
- HEAN, S., ANDERSON, L., GREEN, C., JOHN, C., PITT, R. and O'HALLORAN, C., 2016. Reviews of theoretical frameworks: Challenges and judging the quality of theory application. *Medical Teacher*, 38(6), pp. 613-620.
- HEAN, S., CRADDOCK, D. and O'HALLORAN, C., 2009. Learning Theories and Interprofessional Education: a User's Guide. *Learning in Health and Social Care*, 8(4), pp. 250-262.
- HEALTH AND CARE PROFESSIONS COUNCIL HCPC, 2016. Standards. <https://www.hcpc-uk.org/standards/> [Accessed 3 January 2018]
- HEFFERON, K., and GIL-RODRIGUEZ, E. 2011. Interpretative Phenomenological Analysis. *The Psychologist*, 24(10), pp.756-459.
- HEIDEGGER, M., 1962. *Being and Time*. 1927. Trans. John Macquarrie and Edward Robinson. New York: Harper.
- HILTON, S. and SOUTHGATE, L., 2007. Professionalism in medical education. *Teaching and Teacher Education*, 23(3), pp.265-279.
- HOPKINS, R.M., REGEHR, G. and PRATT, D.D., 2017. A framework for negotiating positionality in phenomenological research. *Medical Teacher*, 39(1), pp. 20-25.
- HUGGINS, K., 2004. Lifelong learning—the key to competence in the intensive care unit? *Intensive and Critical Care Nursing*, 20(1), pp. 38-44.
- HUSSERL, E., 1997. Phenomenology. Encyclopaedia Britannica article. Draft D. *Psychological and Transcendental Phenomenology and the Confrontation with Heidegger (1927–1931)*, pp.159-179.
- HUTCHINSON, M., HIGSON, M., CLEARY, M. and JACKSON, D., 2016. Nursing expertise: a course of ambiguity and evolution in a concept. *Nursing Inquiry*, 23(4), pp. 290-304.
- ILLERIS, K. 2009, *Contemporary Theories of Learning: Learning Theorists. In Their Own Words*, Routledge, London; New York.
- JOHNSTON, J. and DORNAN, T., 2015. Activity theory: mediating research in medical education. *Researching Medical Education*, pp. 93-104.
- JONSSON, B., NILSSON, M.S., PENNBRANT, S. and LYCKHAGE, E.D., 2014. From work integrated learning to learning integrated work-A pedagogical model to develop praxis in nursing education. *Journal of Nursing Education and Practice*, 4(11), p.91.
- KAHNEMAN, D. and KLEIN, G., 2009. Conditions for intuitive expertise: a failure to disagree. *American Psychologist*, 64(6), p.515.

- KANUHA, V.K., 2000. "Being" native versus "going native": conducting social work research as an insider. *Social Work*, 45(5), pp. 439-447.
- KEMMIS, S., 2009. What is professional practice? Recognising and respecting diversity in understandings of practice. In *Elaborating Professionalism* (pp. 139-165). Springer, Dordrecht.
- KNOWLES, M.S., ELWOOD F. HOLTON III and SWANSON, R.A., 2005, *The Adult Learner*, 6th edn, Routledge Ltd - M.U.A.
- KOLB, D., 1984. *Experiential Learning*, Englewood cliffs: New Jersey
- KOLB, D.A., 1975. Toward an applied theory of experimental learning. *Theories of Group Processes*.
- KOLB, A.Y. and KOLB, D.A., 2009. The Learning Way. *Simulation and Gaming*, 40(3), pp. 297-327.
- KOTZEE, B., 2012. Private practice: Exploring the missing social dimension in 'reflective practice'. *Studies in Continuing Education*, 34(1), pp.5-16.
- KRATHWOHL, D.R., 2002. A revision of Bloom's taxonomy: An overview. *Theory into Practice*, 41(4), pp.212-218.
- KRATHWOHL, D.R., BLOOM, B.S. and MASIA, B.B., 1964. *Taxonomy of Educational Objectives, Handbook ii: Affective Domain*. New York: David McKay Company.
- KVALE, S., 1996. *Interviews: an Introduction to Qualitative Research Interviewing*. London: Sage.
- LAMBERT, T.W., SMITH, F. and GOLDACRE, M.J., 2018. Why doctors consider leaving UK medicine: qualitative analysis of comments from questionnaire surveys three years after graduation. *Journal of the Royal Society of Medicine*, 111(1), pp.18-30.
- LANGDRIDGE, D., 2007. *Phenomenological psychology: Theory, Research and Method*. Pearson Education.
- LARKIN, M., WATTS, S. and CLIFTON, E., 2006 Giving voice and making sense in interpretative phenomenological analysis. *Qualitative Research in Psychology*, 3(2), pp. 102-120.
- LAVE, J., 2009. *The practice of learning*. In ILLERIS, K. 2009, *Contemporary Theories of Learning: Learning Theorists. In Their Own Words*, Routledge, London; New York.
- LAVE, J. and WENGER, E., 1991. *Situated learning: Legitimate Peripheral Participation*. Cambridge university press.
- LANE, P.C., CHENG, P.C. and GOBET, F., 2000. Learning perceptual schemas to avoid the utility problem. In *Research and Development in Intelligent Systems XVI* (pp. 72-82). Springer, London.
- LLOYD, B., PFEIFFER, D., DOMINISH, J., HEADING, G., SCHMIDT, D. and MCCLUSKEY, A., 2014. The New South Wales Allied Health Workplace Learning Study: barriers and enablers to learning in the workplace. *BMC Health Services Research*, 14, pp. 134.

- LOCKYER, J.M., HODGSON, C.S., LEE, T., FAREMO, S., FISHER, B., DAFOE, W., YIU, V. and VIOLATO, C., 2016. Clinical teaching as part of continuing professional development: Does teaching enhance clinical performance? *Medical Teacher*, 38(8), pp. 815-822.
- MAGGS-RAPPORT, F., 2000. Combining methodological approaches in research: ethnography and interpretive phenomenology. *Journal of Advanced Nursing*, 31(1), pp.219-225.
- MARSHALL, A.P., WEST, S.H. and AITKEN, L.M., 2013. Clinical credibility and trustworthiness are key characteristics used to identify colleagues from whom to seek information. *Journal of Clinical Nursing*, 22(9), pp. 1424-1433.
- MARSICK, V.J. and WATKINS, K.E., 2001. Informal and Incidental Learning. *New Directions for Adult and Continuing Education*, 89, pp. 25-34.
- MASLOW, A.H., 1943. A theory of human motivation. *Psychological Review*, 50(4), p.370.
- MASLOW, A.H., 1954. *Personality and Motivation*. Harlow, England: Longman.
- MASLOW, A. H., 1987. 3rd ed. *Motivation and personality*. New York: Harper & Row.
- MAUTHNER N, and DOUCET A, 2003. Reflexive Accounts and Accounts of Reflexivity in Qualitative Data Analysis. *Sociology*, 37(3), pp. 413-431.
- MCDERMID, F., PETERS, K., JACKSON, D. and DALY, J., 2014. Conducting qualitative research in the context of pre-existing peer and collegial relationships. *Nurse Researcher*, 21(5), pp. 28.
- MCGAGHIE, W.C. and KRISTOPAITIS, T., 2015. 19 Deliberate practice and mastery learning: origins of expert medical performance. *Researching Medical Education*, p.219.
- MERLEAU-PONTY, M., 2002. *Husserl at the Limits of Phenomenology, Including Texts by Edmund Husserl*, eds. by L. Lawlor and B. Bergo.
- MILLER, G.E., 1990. The assessment of clinical skills/competence/performance. *Academic Medicine*, 65(9), pp. S63-7.
- MOLDEN, D.C. and DWECK, C.S., 2006. Finding" meaning" in psychology: a lay theories approach to self-regulation, social perception, and social development. *American Psychologist*, 61(3), p.192.
- MORRISON, S.M. and SYMES, L., 2011. An Integrative Review of Expert Nursing Practice. *Journal of Nursing Scholarship*, 43(2), pp. 163-170.
- MULDOWNEY, Y. and MCKEE, G., 2011. Nurses new to intensive care: perceptions of their clinical learning environment. *Nursing in Critical Care*, 16(4), pp. 201-209.
- MULHALL, S., 1996. Knowing and acknowledging. *The Cavell Reader*, pp.47-71.
- MYLOPOULOS, M. and FARHAT, W., 2015. "I can do better": exploring purposeful improvement in daily clinical work. *Advances in Health Sciences Education*, 20(2), pp. 371-383.

- NEWTON, J.M., HENDERSON, A., JOLLY, B. and GREAVES, J., 2015. A contemporary examination of workplace learning culture: an ethnomethodology study. *Nurse Education Today*, 35(1), pp. 91-96.
- NG, S.L. and WRIGHT, S.R., 2017. When I say... praxis. *Medical Education*, 51(8), pp.784-786.
- NISBET, G., DUNN, S. and LINCOLN, M., 2015. Interprofessional team meetings: Opportunities for informal interprofessional learning. *Journal of Interprofessional Care*, 29(5), pp. 426.
- NISBET, G., LINCOLN, M. and DUNN, S., 2013. Informal interprofessional learning: an untapped opportunity for learning and change within the workplace. *Journal of Interprofessional Care*, 27(6), pp. 469-475.
- NOBLE, C. and HASSELL, K., 2008. Informal learning in the workplace: what are the environmental barriers for junior hospital pharmacists? *International Journal of Pharmacy Practice*, 16(4), pp. 257-263.
- NORCINI, J., 2016. Understanding learning in the workplace for those who practise: we can't wait another 50 years. *Medical Education*, 50(1), pp. 18-20.
- NORDQUIST, J., HALL, J., CAVERZAGIE, K., SNELL, L., CHAN, M.K., THOMA, B., RAZACK, S. and PHILIBERT, I., ELSEY, E., FLEMING, S. and RAZACK, S., 2019. Learning and professional acculturation through work: Examining the clinical learning environment through the sociocultural lens. *Medical Teacher*, 41 pp. 398-402.
- NURSING AND MIDWIFERY COUNCIL, 2015 *The Code: Professional Standards of Practice and Behaviour for Nurses, Midwives And Nursing Associates*. NMC: London.
- PARADIS, E., LESLIE, M. and GROPPER, M., 2016. Interprofessional rhetoric and operational realities: an ethnographic study of rounds in four intensive care units. *Advances in Health Sciences Education*, 21(4), pp. 735-748.
- PERRY, W.G. 1970. *Forms of Intellectual and Ethical Development the College Years: A Scheme*. New York: Holt, Rinehart and Winston.
- PASSARELLI, A.M. and KOLB, D.A., 2011. The learning way—Learning from experience as the path to lifelong learning and development. *The Oxford Handbook of Lifelong Learning*, pp.70-90.
- PEARSON, D.J. and LUCAS, B.J., 2011. Engagement and opportunity in clinical learning: Findings from a case study in primary care. *Medical Teacher*, 33(12), pp. e677.
- PETTERSSON, A.F., BOLANDER LAKSOV, K. and FJELLSTRÖM, M., 2015. Physiotherapists' stories about professional development. *Physiotherapy Theory and Practice*, 31(6), pp. 396-402.
- PICS COMMITTEE, 2016. *PICS Quality standards*. 86(11), pp. 3.
- PIAGET, J., 1926. Psychology:(Translated from the French by Marthe Sturm). *The Monist*, 36(3), pp.430-455.

- PIMMER, C., PACHLER, N. and GENEWEIN, U., 2013. Contextual dynamics in clinical workplaces: learning from doctor-doctor consultations. *Medical Education*, 47(5), pp. 463-475.
- PIMMER, C., PACHLER, N., NIERLE, J. and GENEWEIN, U., 2012. Learning through inter- and intradisciplinary problem solving: using cognitive apprenticeship to analyse doctor-to-doctor consultation. *Advances in Health Sciences Education*, 17(5), pp. 759-778.
- PRINCE, K.J. and BOSHUIZEN, H.P., 2004. From theory to practice in medical education. In *Professional learning: Gaps and transitions on the way from novice to expert* (pp. 121-139). Springer Netherlands.
- PRING, R., 2000. The 'false dualism' of educational research. *Journal of Philosophy of Education*, 34(2), pp.247-260.
- PRINGLE, J., HENDRY, C. and MCLAFFERTY, E., 2011. Phenomenological Approaches: challenges and choices. *Nurse Researcher*, 18(2), pp. 7-18.
- PYPE, P., PEERSMAN, W., WENS, J., STES, A., VAN DEN EYNDEN, B. and DEVEUGELE, M., 2014. What, how and from whom do health care professionals learn during collaboration in palliative home care: a cross-sectional study in primary palliative care. *BMC Health Services Research*, 14(1), pp. 501.
- QALEHSARI, M.Q., KHAGHANIZADEH, M. and EBADI, A., 2017. Lifelong learning strategies in nursing: A systematic review. *Electronic Physician*, 9(10), p.5541.
- QUEST, A.D., 2014. *Out of the Way and Out of Place: An Interpretative Phenomenological Analysis of the Experiences of Social Interactions of Bisexually Attracted Young People*. PhD. Portland State University.
- RANDOLPH, J. 2009. A Guide to Writing the Dissertation Literature Review. *Practical Assessment*, 14(13), pp. 1-13.
- RAZACK, S. and PHILIBERT, I., 2019. Inclusion in the clinical learning environment: Building the conditions for diverse human flourishing. *Medical Teacher*, 41 pp. 380-384.
- REID, K., FLOWERS, P. and LARKIN, M., 2005. Exploring lived experience: An introduction to interpretative phenomenological analysis. *The Psychologist*, 18 (1), 20-23.
- RESUSCITATION COUNCIL (UK), 2015 *Paediatric Advanced Life Support*. Resuscitation Council (UK), London.
- ROYAL COLLEGE OF NURSING, 2016. *Investing in a Safe and Effective Workforce: Continuing professional development for nurses in the UK*. RCN; London.
- RUBIN, H.J. and RUBIN, I. 2012, *Qualitative Interviewing: The Art of Hearing Data*, 3rd edn, SAGE, London.
- RUITER, D.J., VAN KESTEREN, M.T. and FERNANDEZ, G., 2012. How to achieve synergy between medical education and cognitive neuroscience? An exercise on prior knowledge in understanding. *Advances in Health Sciences Education*, 17(2), pp.225-240.
- RYAN, R.M. and DECI, E.L., 2000. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), p.68.

- RYLE, G., 1945, January. Knowing how and knowing that: The presidential address. In *Proceedings of the Aristotelian Society* (Vol. 46, pp. 1-16). Aristotelian Society, Wiley.
- SAGASSER, M.H., KRAMER, A.W.M., FLUIT, C R M G, VAN WEEL, C. and VAN DER VLEUTEN, C P M, 2016. Self-entrustment: how trainees' self-regulated learning supports participation in the workplace. *Advances in Health Sciences Education: Theory and Practice*, 22(4), pp.931-949.
- SACKETT, D.L., ROSENBERG, W.M., GRAY, J.M., HAYNES, R.B. and RICHARDSON, W.S., 1996. Evidence based medicine: what it is and what it isn't. *British Medical Journal* 312 p.71
- SANDELOWSKI, M. and BARROSO, J., 2002. Finding the findings in qualitative studies. *Journal of Nursing Scholarship*, 34(3), pp.213-219.
- SANTHOSH, L., BROWN, W., FERREIRA, J., NIROULA, A. and CARLOS, W.G., 2018. Practical Tips for ICU Bedside Teaching. *Chest*, 154(4), pp.760-765.
- SARGEANT, J., MANN, K., SINCLAIR, D., FERRIER, S., MUIRHEAD, P., VAN DER VLEUTEN, C. and METSEMAKERS, J., 2006. Learning in practice: experiences and perceptions of high-scoring physicians. *Academic Medicine*, 81(7), pp.655-660.
- SAVIN-BADEN, M. and MAJOR, C.H., 2013. *Qualitative Research: The Essential Guide to Theory and Practice*. Routledge.
- SAWCHUK, P.H., 2010. Reading across Workplace Learning Research to Build Dialogue. *Frontiers of Education in China*, 5(3), pp. 365-381.
- SCHÖN, D., 1983. *The Reflective Practice*. New York, Basic Books.
- SCHMIDT, L.K. 2006. *Understanding Hermeneutics*. Stocksfield: Acumen.
- SCHUMACHER, D.J., ENGLANDER, R. and CARRACCIO, C., 2013. Developing the Master Learner: Applying Learning Theory to the Learner, the Teacher, and the Learning Environment. *Academic Medicine*, 88(11), pp. 1635-1645.
- SHANTEAU, J., 1992. Competence in experts: The role of task characteristics. *Organizational Behavior and Human Decision Processes*, 53, pp.252-252.
- SHINEBOURNE, P., 2011. The theoretical underpinnings of Interpretative Phenomenological Analysis. *Existential Analysis*, 22(1), pp. 16.
- SIPOS, Y., BATTISTI, B. and GRIMM, K., 2008. Achieving transformative sustainability learning: engaging head, hands and heart. *International Journal of Sustainability in Higher Education*, 9(1), pp. 68-86.
- SKINNER, B.F., 2011. *About behaviorism*. Vintage.
- SKULE, S., 2004. Learning conditions at work: a framework to understand and assess informal learning in the workplace. *International Journal of Training And Development*, 8(1), pp.8-20.
- SMITH, J., 2010. Interpretative Phenomenological Analysis: A Reply to Amedeo Giorgi. *Existential Analysis*, 21(2), pp. 186-192.

- SMITH, J. A., 1996. Beyond the Divide between Cognition and Discourse: Using Interpretative Phenomenological Analysis in Health Psychology. *Psychology and Health*, 11, 261-271
- SMITH, J.A., FLOWERS, P. and LARKIN, M., 2009. *Interpretative Phenomenological Analysis: Theory, Method and Research*. Sage.
- SMITH, J.A., 2004. Reflecting on the development of interpretative phenomenological analysis and its contribution to qualitative research in psychology. *Qualitative Research in Psychology*, 1(1), pp.39-54.
- SMITH, J.A. and OSBORN, M., 2004. Interpretative phenomenological analysis. *Doing Social Psychology Research*, pp.229-254.
- SMITH, J. A., & OSBORN, M., 2008. Interpretative Phenomenological Analysis. In J. Smith, *Qualitative Psychology: A Practical Guide to Research Methods* (pp. 53-80). London: Sage.
- SMITH, A., GOODWIN, D., MORT, M. and POPE, C., 2003. Expertise in practice: an ethnographic study exploring acquisition and use of knowledge in anaesthesia. *British Journal of Anaesthesia*, 91(3), pp.319-328.
- SOLOMON, N., BOUD, D., LEONTIOS, M. and STARON, M., 2001. Researchers are learners too: collaboration in research on workplace learning. *Journal of Workplace Learning*, 13(7/8), pp.274-282.
- STEINAKER, N. and BELL, M., 1979. *The Experiential Taxonomy: A New Approach to Teaching and Learning*. (2nd ed.). London: Academic Press.
- STUPANS, I., 2012. Lifelong Learning: Views of Australian Pharmacy Interns. *Journal of Pharmacy Practice and Research*, 42(1), pp. 30-32.
- TABARI-KHOMEIRAN, R., KIGER, A., PARSAYEKTA, Z.A. and AHMADI, F., 2007. Competence Development Among Nurses: The Process of Constant Interaction. *The Journal of Continuing Education in Nursing*, 38(5), pp. 211-218.
- TAY, L. and DIENER, E., 2011. Needs and subjective well-being around the world. *Journal of Personality and Social Psychology*, 101(2), p.354.
- TAYLOR, D.C.M. and HAMDY, H., 2013. Adult learning theories: Implications for learning and teaching in medical education: AMEE Guide No. 83. *Medical Teacher*, 35(11), pp. e1572.
- TEE, S. and SCAMMELL, J., 2018. *Why do nurses leave or stay?* Nurse retention-a global issue.
- TEN CATE, O.T.J., KUSURKAR, R.A. and WILLIAMS, G.C., 2011. How self-determination theory can assist our understanding of the teaching and learning processes in medical education. AMEE guide No. 59. *Medical Teacher*, 33(12), pp.961-973.
- TEUNISSEN, P., 2015. Experience, trajectories, and reifications: an emerging framework of practice-based learning in healthcare workplaces. *Advances in Health Sciences Education*, 20(4), pp. 843-856.

- TEUNISSEN, P.W. and DORNAN, T., 2008. Lifelong learning at work. *BMJ (Clinical Research ed.)*, 336(7645), pp. 667-669.
- THORNE, S., 2016. *Interpretive Description: Qualitative Research for Applied Practice*, Second edn, Routledge, London, [England]; New York, New York.
- THORNTON MOORE, D., 2004. Curriculum at work *Journal of Workplace Learning* 16 (6) pp. 325-340.
- THROOP, C.J. and MURPHY, K.M., 2002. Bourdieu and phenomenology: A critical assessment. *Anthropological Theory*, 2(2), pp.185-207.
- TOMKINS, L. & EATOUGH, V. 2018. Hermeneutics: Interpretation, understanding and sense-making. In Cassell, C., Cunliffe, A.L. & Grandy, G. eds. *The SAGE Handbook of Qualitative Business and Management Research Methods*. Los Angeles: Sage. Pp. 185-200
- TUFFOUR, I., 2017. A critical overview of interpretative phenomenological analysis: a contemporary qualitative research approach. *Journal of Healthcare Communications*, 2(4), p.52.
- VAN DE WIEL, M. and VAN DEN BOSSCHE, P. 2013. Deliberate Practice in Medicine: The Motivation to Engage in Work-Related Learning and Its Contribution to Expertise. *Vocations and Learning*, 6(1), pp. 135-158.
- VAN DE WIEL, M., VAN DEN BOSSCHE, P., JANSSEN, S. and JOSSBERGER, H., 2011. Exploring deliberate practice in medicine: how do physicians learn in the workplace? *Advances in Health Sciences Education*, 16(1), pp. 81-95.
- VAN MANEN, M., 2011. Phenomenology Online: a resource for phenomenological Inquiry. <http://www.phenomenologyonline.com/> [Accessed January 3 2018]
- VARPIO, L., BIDLAKE, E., CASIMIRO, L., HALL, P., KUZIEMSKY, C., BRAJTMAN, S. and HUMPHREY-MURTO, S., 2014. Resident experiences of informal education: how often, from whom, about what and how. *Medical Education*, 48(12), pp. 1220-1234.
- VAUGHAN, K., 2016. Vocational thresholds: developing expertise without certainty in general practice medicine. *Journal of Primary Health Care*, 8(2), pp. 99.
- VYGOTSKY, L., 1987. Zone of proximal development. *Mind in Society: The Development of Higher Psychological Processes*, 5291, p.157.
- WAGSTAFF, C., JEONG, H., NOLAN, M., WILSON, T., TWEEDLIE, J., PHILLIPS, E., SENU, H. and HOLLAND, F., 2014. The accordion and the deep bowl of spaghetti: Eight researchers' experiences of using IPA as a methodology. *The Qualitative Report*, 19(24), pp.1-15.
- WAGTER, J.M., VAN DE BUNT, G., HONING, M., ECKENHAUSEN, M. and SCHERPBIER, A., 2012. Informal interprofessional learning: Visualizing the clinical workplace. *Journal of Interprofessional Care*, 26(3), pp. 173-182.
- WALSH, D. and DOWNE, S., 2005. Meta-synthesis method for qualitative research: a literature review. *Journal of Advanced Nursing*, 50(2), pp.204-211.

- WARING, J.J. and BISHOP, S., 2010. "Water-cooler learning: Knowledge sharing at the clinical "backstage" and its contribution to patient safety. *Journal of Health Organization and Management*, 24(4), pp. 325-342.
- WATLING, C. DRIESSEN, E. VAN DER VLEUTEN, C.P.M. AND LINGARD, L., 2012. Learning from clinical work: the roles of learning cues and credibility judgements. *Medical Education*, 46, pp. 192-200.
- WILLIG, C., 2008. *Qualitative Research in Psychology*. Maidenhead: Open University Press. Google Scholar.
- WELCH, T.D., 2016. *Evolution of Expertise Among Critical Care Nurses*, ProQuest Dissertations Publishing.
- WENGER, E. 2009 A social theory of learning, in WENGER, E., WHITE, N. and SMITH, J.D., (Eds) 2009. *Digital Habitats: Stewarding Technology for Communities*. CPsquare.
- WENGER, E., MCDERMOTT, R.A. and SNYDER, W., 2002. *Cultivating Communities of Practice: A Guide To Managing Knowledge*. Harvard Business Press.
- WENRICH, M.D., JACKSON, M.B., AJAM, K.S., WOLFHAGEN, I.H. and RAMSEY, P.G., 2011. Teachers as learners: the effect of bedside teaching on the clinical skills of clinician-teachers. *Academic Medicine*, 86(7), pp. 852; 852.
- WILLETTS, G. and CLARKE, D., 2014. Constructing nurses' professional identity through social identity theory. *International Journal of Nursing Practice*, 20(2), pp. 164-169.
- WILLIAMS, C., 2010. Understanding the essential elements of work-based learning and its relevance to everyday clinical practice. *Journal of Nursing Management*, 18(6), pp. 624-632.
- WORLD HEALTH ORGANISATION, 2007. Standard precautions in health care. https://www.who.int/csr/resources/publications/EPR_AM2_E7.pdf?ua=1 [accessed 3 January 2018]
- YARDLEY, S., TEUNISSEN, P.W. and DORNAN, T., 2012. Experiential learning: Transforming theory into practice. *Medical Teacher*, 34(2), pp. 161-164.
- YARDLEY, L., 2000. Dilemmas in qualitative health research. *Psychology and Health*, 15(2), pp.215-228.

APPENDIX I: INFORMATION LETTER TO POTENTIAL PARTICIPANTS

I am writing to request your participation in a research study I am undertaking for my Doctorate at Edge Hill University. I have always had an interest in learning which takes place within the clinical setting, and now have the opportunity to investigate such learning for this project.

My aim is to investigate the importance of workplace learning to those who are already experts in their profession. Research on this form of learning has more often focussed on undergraduate learners, and also those newly qualified. However, the knowledge and skills that such experts hold initially, and the developing roles within the wider team, can mean that such a skill set changes over time. So, to what extent does the workplace help you to maintain such expertise?

I am also enclosing the questions which will form the basis of an interview. Then, should you choose to participate, you can consider these prior to an arranged meeting. The questions are only the basis, and you will be free to talk about your own experiences in your own way. I would very much welcome your participation in this study, even if you feel this way of learning is not particularly important to you; there are no right or wrong answers! Throughout the interview, you will be free to interrupt, ask for clarification, or make any relevant criticisms. You will also be free to leave the interview at any stage or withdraw from the study altogether should you wish to do so.

I also ask that you allow the interview to be audio-recorded and transcribed, in order to ensure accuracy and aid the analysis. Your answers will form part of a written report, but your name or any identifiable details will remain anonymous and confidential. In addition, if there is the possibility that you could be identified by particular comments, I will edit in such a way as to guard against this. I would also like the opportunity to contact you via phone should I have questions regarding clarification of our conversation at this interview, and would invite you to email me if you have further comments you would like to include. Following your interview, I will provide you a copy of the transcription for your inspection, and would be grateful if you would verify its accuracy.

Finally, please feel free to contact me if you have things you would like to discuss prior to making a decision. Please refer to the summarised information sheet, and if you would like to be part of this project then please let me know by email or phone, with a month – see details below.

With thanks,

Jill Cochrane
Senior Lecturer Clinical Education
Edge Hill University

cochranj@edgehill.ac.uk
Tel: 01685 584479

APPENDIX II: SUMMARISED INFORMATION SHEET FOR PARTICIPANTS

TITLE OF RESEARCH PROPOSAL: The relevance of workplace-initiated learning in the maintenance of expertise: what are the experiences of experts within a multi-professional paediatric critical care team?

INVITATION TO TAKE PART IN THIS STUDY

You are being invited to take part in this research study, but before you do so, it is important for you to understand why this is being undertaken, and what taking part will involve. Please take time to read this information carefully, discussing it with other should you wish. Please contact me if there is anything that is unclear, or if you would like more information.

Thank you for reading this.

WHAT IS THE PURPOSE OF THIS STUDY?

The aim of my study is gain an understanding of the importance of workplace learning to those who are already experts in their profession. Research on this form of learning has been undertaken focussed on undergraduate learners, and also those newly qualified. However, the knowledge and skills that such experts hold initially, and the developing roles within the wider team, can mean that such a skill set changes over time. So to what extent does the workplace help you to maintain such expertise?

WHY HAVE I BEEN CHOSEN?

The potential participants are expert professional clinicians within the Paediatric Intensive Care team; the following clinicians will be invited to take part:

Band 6 & 7 nurses

Nurse Consultant and Advance Nurse Practitioners

Medical Consultants

Senior critical care physiotherapists and pharmacists

WHAT WILL HAPPEN IF I TAKE PART, AND WHAT DO I HAVE TO DO?

You will be invited to take part in a face-to-face semi-structured interview, in a private area at a time and place of your convenience, lasting no more than an hour. The interview will be audio-recorded and transcribed, and I will follow the interview with a phone call, to potentially ask for clarification and give the opportunity for you to include any additional detail. You are free to email or phone/text

me should you have any questions at any point in the research process, and also if you have further comment you would like to include. I will ask you to verify and sign your transcript.

HOW WILL CONFIDENTIALITY BE MAINTAINED?

Interview recordings and transcriptions will be kept securely, either password protected if electronic, or locked if hard copy. Thus confidentiality will be assured to participants, the exception being solely in the unlikely event of unsafe practice being highlighted during interviews, in which case this would involve disclosure to the relevant regulatory channels. Likewise, if you have unease over any aspect of the research process, you would be able to contact my supervisor.

You are free to leave the interview at any stage, and withdraw from the study altogether should you wish to do so, up until the point at which you sign to verify your transcript.

WILL I BENEFIT PERSONALLY IN ANY WAY FROM TAKING PART IN THIS STUDY?

Other than a potentially professional one, no. But I hope that participants feel they can have an active and contributory role in the research process.

WHO HAS REVIEWED THE STUDY?

The proposal has been reviewed by the Faculty of Health's Research Ethics committee, to protect your safety, rights, well-being and dignity. In addition, the study has been reviewed by an NHS Ethics committee.

WHAT WILL HAPPEN WHEN THE STUDY IS FINISHED?

I hope to present and publish research findings after completion. There is also the potential to publish whilst the study is in progress, with respect to choices in research methodology for example. I would also like to present findings to the Unit. You will not be identified in any reports or publications.

cochranj@edgehill.ac.uk
Tel: 01685 584479

APPENDIX III: RESEARCH PARTICIPANT CONSENT FORM

Research undertaken as part of a PhD at Edge Hill University, St Helens Road, Ormskirk Lancashire L39 4QP.

Title of project: The relevance of workplace-initiated learning in the maintenance of expertise. What are the experiences of experts within a multi-professional paediatric critical care team?

Name of Researcher: Jill Cochrane

Participant Identification Number:

Please initial box

1. I confirm I have read and understood the information sheet relating to this study. I have had the opportunity to ask questions, have had them answered satisfactorily, and have had time to consider whether I wish to participate.
2. I agree to be interviewed and for the interview to be audio-recorded.
3. I agree to be contacted by phone to allow clarification of recorded and transcribed data.
4. I have I understand that participation is voluntary, I am free to withdraw prior to verification of interview data, and do not need to give reasons for this.
5. I agree that anonymous quotations and information from my transcribed interview may be used in future reports, articles or presentations by the researcher.
6. I understand that every effort will be made to protect my confidentiality and ensure I will not be identifiable.
7. I agree to take part in this study.

☐
☐
☐
☐
☐
☐
☐

Name of Participant

Date

Signature

Name of Researcher

Date

Signature

1 copy for participant; 1 copy for researcher

APPENDIX IV: INTERVIEW QUESTIONS FOR PARTICIPANTS

Questions for Semi-structured Interviews

These are the main questions that will be asked in the semi-structured interviews, in order to elicit the relevant information and achieve the aims of the study. They are aimed at encouraging discussion with you, and I would add further questions depending on your responses. I'll ask the questions in a conversational manner to enable you to elaborate on your answers.

Main Questions

1. How long have you been in your current role on the PICU? Is this the only Unit you have been employed in, in this role? Why did you choose a career in paediatric critical care?
2. What areas of your continuing expertise have been influenced by the clinical workplace?
3. Who or what has been part of the process?
4. Has taking part in this research made you more aware of learning in practice or changed how you think of learning in practice?
5. How important is this way of learning to you?
6. Is there anything else you would like to add?

Questions for Semi-structured Interviews

These are the main questions that will be asked in the semi-structured interviews, in order to elicit the relevant information and achieve the aims of the study. They are aimed at encouraging discussion with you, and I would add further questions depending on your responses. I'll ask the questions in a conversational manner to enable you to elaborate on your answers.

Main Questions

1. How long have you been in your current role on the PICU? Is this the only Unit you have been employed in, in this role? Why did you choose a career in paediatric critical care?

Further exploratory questions

What do you like about your role? What keeps you in paediatric critical care?

What do you like best about this area of work?

2. What areas of your continuing expertise have been influenced by the clinical workplace?

Further exploratory questions

What you know?

Clinical skills/what you do?

How you 'behave'/relate to others/work as part of the multi-professional team/relate to the child, parents and families?

3. Who or what has been part of the process?

Further exploratory questions

Individual learning – in response to what?

Learning within your own professional group?

Within the multi-professional team?

In response to patients and families?

The practices in the clinical workplace?

Anything else?

Learning as influenced by changing roles and responsibilities

4. Has taking part in this research made you more aware of learning in practice or changed how you think of learning in practice?
5. How important is this way of learning to you?

Further exploratory questions

What, for you, supports this way of learning?

What hinders it?

6. Is there anything else you would like to add?

APPENDIX VI: SUMMARY OF RESEARCH PROCESS FOR PARTICIPANTS

